

ABSTRACT

**Title of Thesis: A RECREATION AND WELLNESS CENTER IN
WALDORF, MARYLAND: CREATING CONNECTIONS
WITHIN A SUBURBAN COMMUNITY**

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This thesis responds to the common condition of disjointed suburban communities, linked only by roads, in the fast-growing town of Waldorf, Maryland.

While the focus of recent development has been directed toward residential dwellings and restaurants, public recreation has been neglected. By applying a new fabric of residential and commercial development influenced by The New Urbanism, and a park system connected by a network of trails, the young members of the disjointed communities can be easily brought together for mental and physical stimulation outside of their homes, where such development is limited.

By creating a mixed-use recreation and wellness center in the new park system between three schools, visual and physical links can be formed. Interior spaces provide comfortable areas for activity, socializing, and assembly, all of which are integral parts of a healthier body, mind, and soul.

A RECREATION AND WELLNESS CENTER IN
WALDORF, MARYLAND
CREATING CONNECTIONS WITHIN A SUBURBAN COMMUNITY

by

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University of Maryland, College Park in partial fulfillment
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2004

Preface

In Ancient Rome, plebes kept very active lifestyles primarily through their daily work, pulling carts up and down hilly streets, carrying urns of water from local fountains, and farming. The need to support a family and the end of the overseer's whip required everyone to work faster and often in grueling conditions. Entertainment was a rare, but welcome relief from the daily grind. The Senate recognized socialization as a need and entertainment as feeding the spirit. Therefore, local festivals were steadily promoted and kept the plebes happy. Established cities offered larger venues for theatrical events, gladiator battles, and chariot races that drew crowds from the surrounding territories.

Today, people typically work only nine hours a day for someone else, then put in a few hours for their own home and family, and typically have a few hours of personal entertainment (television) before going to bed. Much of today's workforce sits behind a desk, faced with a computer, a telephone, and a doughnut. In 2003, 46% of American adults were clinically obese¹, a condition that is passed to children through poor eating habits, and inactive lifestyles. Businesses are finding that they have the opportunity to promote a healthy work environment by offering fitness facilities for employees. Additionally, team building activities, such as a Ropes Course, are targeted for businesses to promote physical and mental health. For individuals who seek out daily activity, it is achieved by working out at a gym, going for a walk or bike ride, or simply using stairs instead of an elevator. Weekends offer a greater opportunity to be active and social. In the city, residents have convenient access to parks, trails, and theaters, whereas in the suburbs, residents rely on their cars to take them to the same types of places. Children

¹ <http://www.cbathletics.com>

are faced with similar issues, spending much of the day sitting at a desk. Daily participation of high school physical education class in the United States has declined from 42% to 25%. Not ironically, 25% of American children are now classified as obese. The American Diabetes Association says, “Our children and teens are becoming more overweight and at greater risk of disease.”² After-school programs draw some kids into sports. However, they often rely on motor transportation in order to participate.

Facilities are being built to accommodate the need for more activity. Recreation centers offer a large variety of spaces, equipment, and programs to satisfy the social and physical needs of the communities they serve. Wellness centers offer a health clinic for routine check-ups and consults with a doctor or nurse. Additionally, the centers can offer specialized assistance, such as a women’s clinic, nutritional programs, and other classes to help individuals maintain their health. When incorporated with a recreation center, the two provide complete support for a healthy lifestyle.

Drawing large crowds together for socializing and sporting, recreation centers should organize large areas of land for indoor and outdoor use. For those engaged in an event, the sun and fresh air provide the sporting atmosphere that psychologically satisfies the soul. For onlookers and neighbors, the fields should offer vistas of manicured lawns and activity. As well as vast exterior venues for sports, recreations centers should offer indoor arenas for climate-controlled play. Seasonal events, such as ice hockey and soccer, can share an interior space and provide variety throughout the year.

To create the spaces for the exterior and interior events, my thesis explores the methods of breaking down the scale of such large spaces and creating a place that attracts school-aged children, without shunning other users.

² *ibid.*

this thesis is dedicated to D. Scott Cannon for his endless support and motivation

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A. Site

1. History

Southern Maryland has an abundance of corn and tobacco farms that extend from Washington, D.C. down to the Patuxent and Potomac Rivers. As the metropolitan areas need to expand, they have always consumed neighboring agricultural land looking at a more financially efficient use of the land. My thesis site is a combination of two such existing farms on 66 acres. One is currently a corn and tobacco farm⁵ and the other is farm that is defunct and was recently mined for sand and gravel.⁶



Figure 1. The early 20th Century house (center) and the tobacco barn (right) are both listed on the Charles County Historic Register as “Salvage” opportunities to be purchased and relocated from this site.

⁵ Stonebridge Survey: Forest Stand Delineation, Parcel 324.

⁶ Parcel 154 Mining Plan.

They are bounded by mixed uses: commercial retail, offices, schools, and a large agricultural area (which extends 20 miles to the Chesapeake Bay.) Mattawoman-Beantown Road (Route 5), an Intermediate Arterial road, separates the site from the farm lands, and holds the edge of the central business district for Waldorf along Leonardtown Road (Business Route 5), a Minor Arterial road.⁷ Both of these roads serve Crane Highway (US Route 301), which the county intends to upgrade to a Principal Arterial by 2010 using above-grade interchanges and overpasses.⁸



Figure 2. After being mined, the defunct farm has been rendered as a rolling landscape of grass and trees.

Table 1. From the County Comprehensive Plan Summary, the County recognizes the following street classification system:

Orders of Transportation

Principal Arterial: carries a high volume of traffic for interstate and intrastate travel. This is the highest order of transportation

Intermediate Arterial: carries a high volume of traffic for inter-county and inter-city travel. Controls are used only in areas of high hazard.

Minor Arterial: carries a high volume of traffic for intra-county and inter-community travel.

Major Collector or Parkway: serves intra-county and inter-community travel, but at a lower volume. They may serve community shopping areas, schools, parks, and cluster developments.

Minor Collector: serves intra-community travel at a low volume, directly serving housing and community service buildings.

Local Road: serves housing, and are used as recreation space for local residents. This is the lowest order of transportation maintained by a county.

⁷ Charles County Comprehensive Plan Summary.

⁸ Waldorf Sub-Area Plan, p.9.

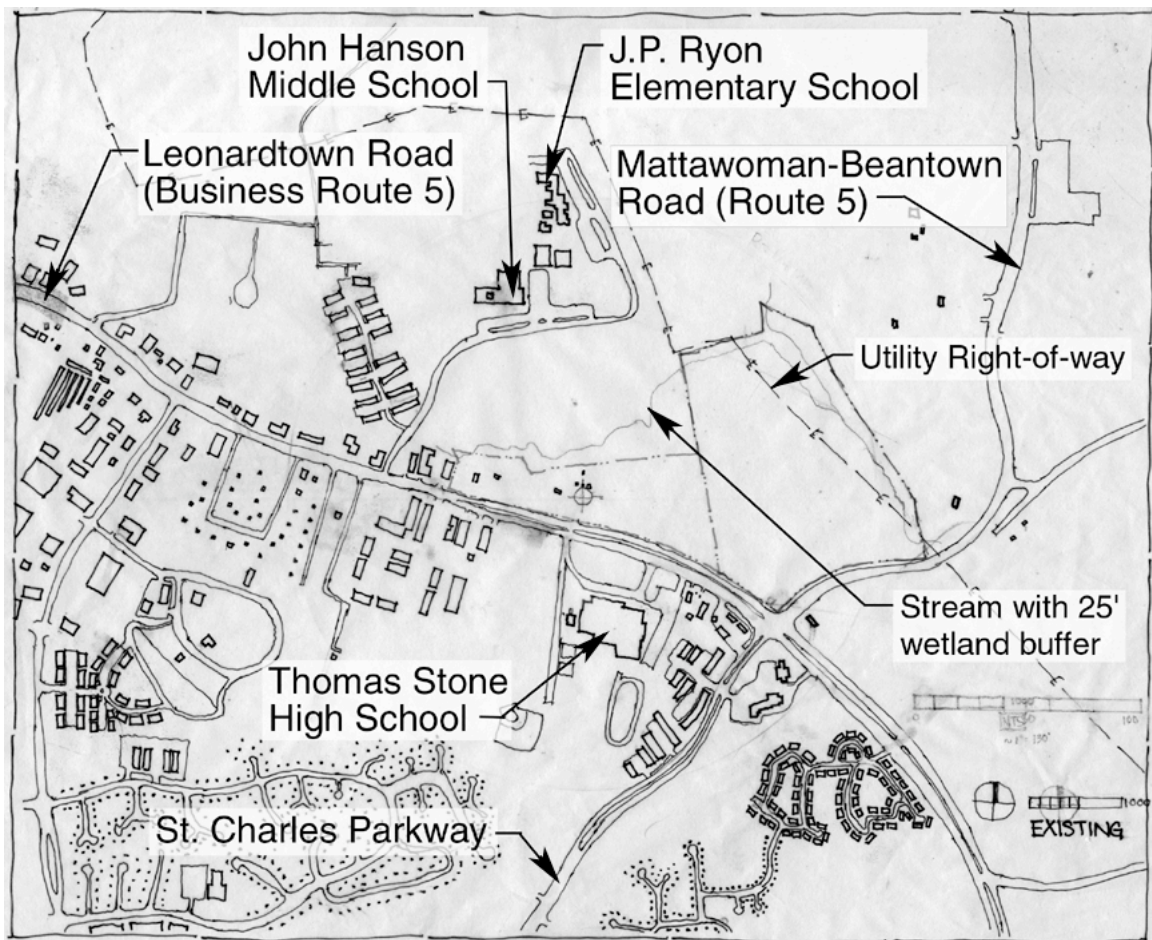


Figure 3. With elementary and middle schools to the north, the central business district to the west, and high school and residential areas to the south, the site has an opportunity to connect and organize the surrounding single family homes, multi-family homes, and apartments.

2. Planning Studies

In 1999, the Charles County Office of Planning assembled a consultant team to help construct a concept plan for the Waldorf Sub-Area. The team included Environmental Resources Management (Annapolis, MD), Parsons, Brinckerhoff, Quade, & Douglas (Baltimore, MD), Torti-Gallas and Partners - CHK (Silver Spring), and Randall Gross, Development Economics (Washington, D.C.). Together with a focus

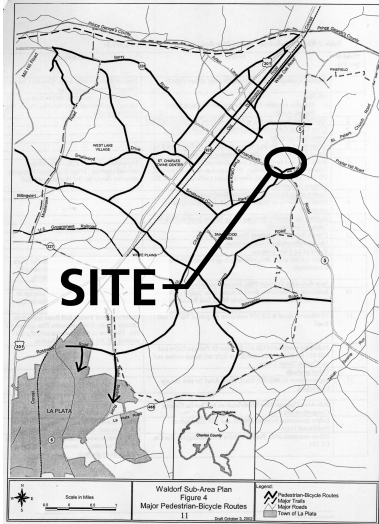


Figure 4. Proposed pedestrian trails link Waldorf, including the site.

group of residents, they acknowledged the need to “create attractive places in Waldorf that can serve as activity nodes for the community.”⁹ They also desired an integrated road and pedestrian network with recreation opportunities. Based on the workshops held by the Waldorf Work Group, the Office of Planning rezoned several areas within Waldorf, including the farms along Leonardtown Road, adjacent to the central business district. The change allows the farms to be developed as mixed-use residential, agricultural, light industry, and/or

commercial. It is this land-use flexibility along with proximity to the central business district, three schools, and residential developments that make this site an ideal opportunity for my thesis: Creating Connections within a Suburban Community.



Figure 5. A fuel station adjacent to the east end of the site was removed in order to create a station with a convenience store to rival the existing convenience store across the street.

⁹ *Waldorf Sub-Area Plan, Waldorf Work Group Concept Plan*, p.3

3. Site Analysis

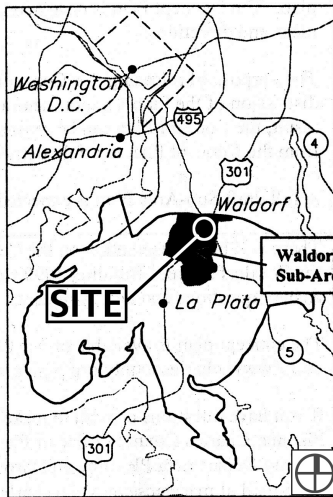


Figure 6. Wedged between the Potomac, Wicomico, and Patuxent Rivers, Waldorf is located 16 miles south of Washington, D.C., and is directly connected by Route 5, and is linked to Metro transit system by Metrobus.

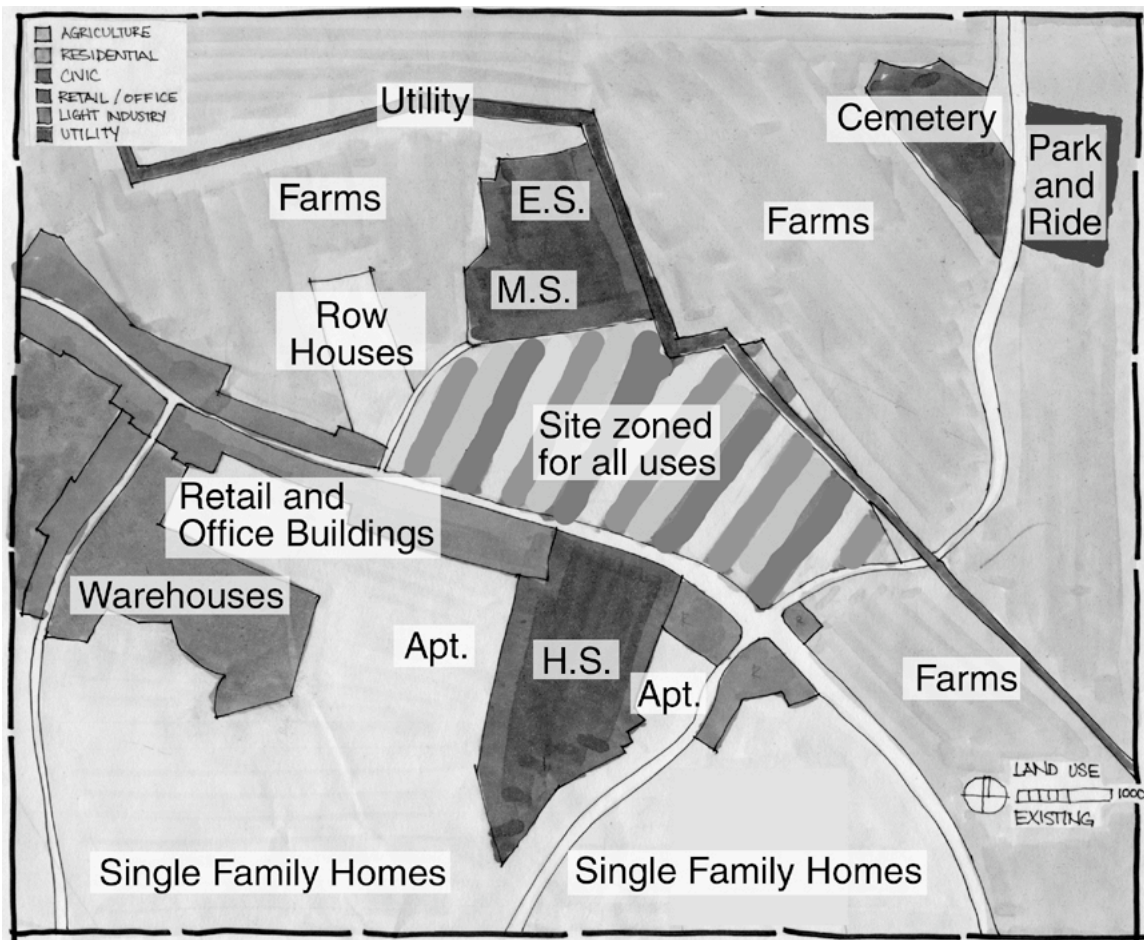


Figure 7. The site was recently rezoned to promote mixed-use development of the area to create an activity node for the central business district.

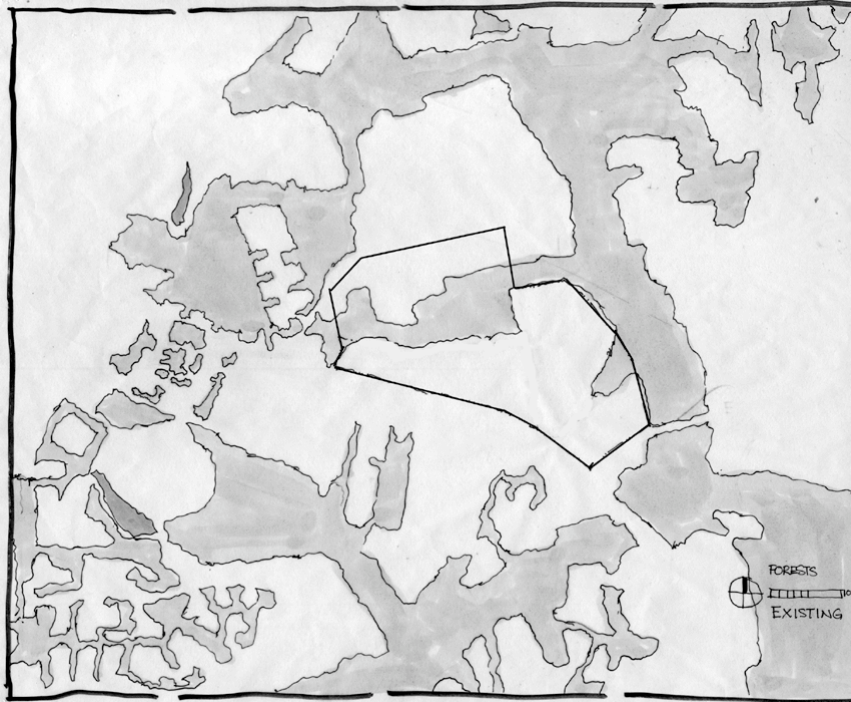


Figure 8. Without any major topography, the forests in the area offer opportunities for separation for the farms from the bright, noisy commercial areas.

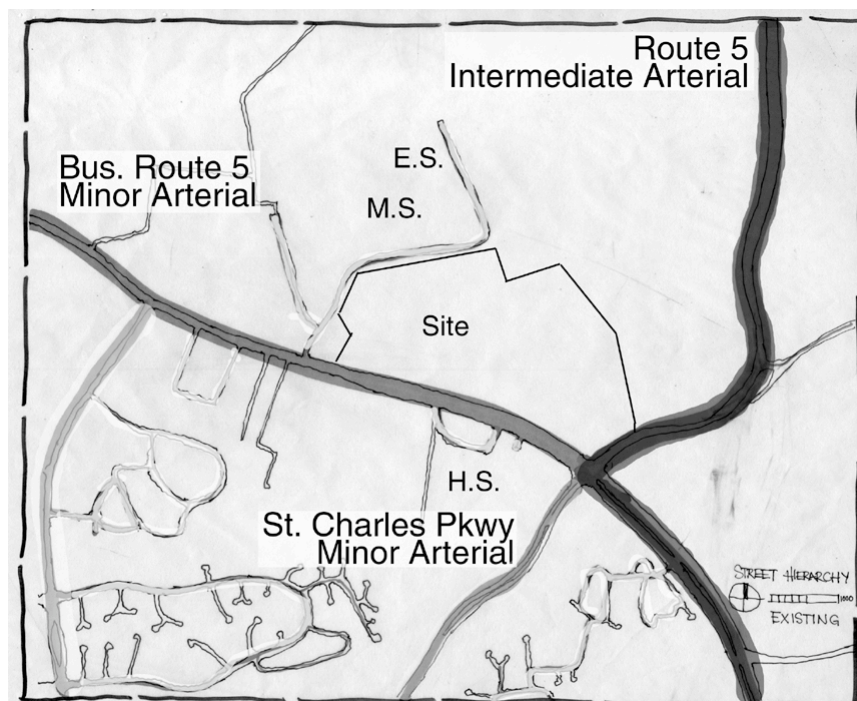


Figure 9. The existing street network does not promote pedestrian use. The residential neighborhoods are disconnected from the main commercial street in this area.

B. Functional Considerations and Program

1. Pragmatic Design Goals

My thesis is focused on how a site employing a public-use building can create a focus of community within a suburban area that currently has unrelated adjacencies and no obvious over-arching plan; all of which are typical conditions in suburban America.¹⁰

As an intervention, the recreation and wellness building(s) and exterior playing fields should be connected to the central business district in order to create an activity node in Waldorf. It should also join the existing residential communities to the CBD to enliven



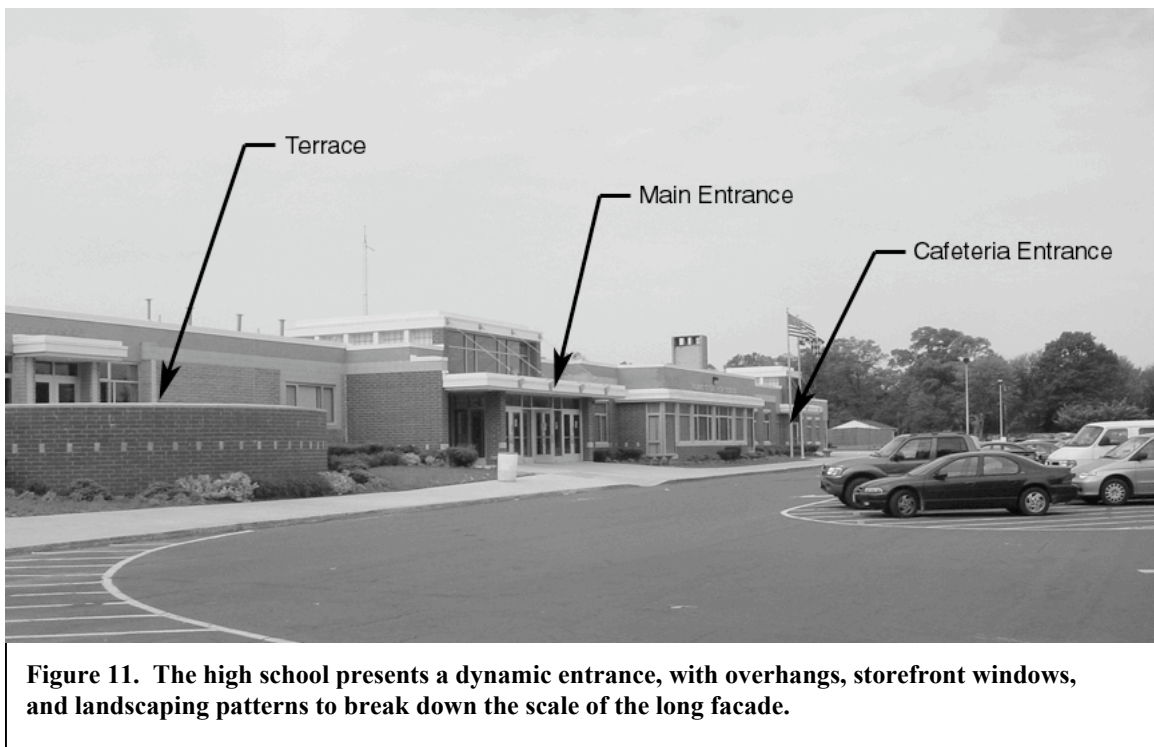
Figure 10. View from Thomas Stone High School.

Currently, a row of wild hedges and trees blocks the view of the school from the farm. The opportunity exists to create a strong connection between the site and the school.

¹⁰ Planning Neighborhood Space with People, p. 21.

the commercial boulevard with more pedestrian traffic. To the same end, the building(s) and exterior playing fields should make clear how new residential communities are to be developed surrounding the center and CBD. These residential areas should be linked to the elementary, middle, and high schools through visual connection, road, pedestrian path, or in a way that is proven appropriate to the overall site design.

The architecture of the building(s) should create a dialog among the existing schools to attract that audience. However, it should not target only a school-aged crowd. While the center addresses the schools, it also serves the entire community of Waldorf, and should not exclude anyone. The scale of the recreation and wellness center should appropriately match the open spaces that it addresses, the surrounding housing and commercial structures, and create comfortable avenues for pedestrian traffic.



Inside, the building(s) should be a venue for a diverse set of indoor activities, including sports, physical training, shopping and after-school care. The local schools provide very little indoor activity space, but have well-maintained exterior fields. The recreation and wellness center should be a place the schools can use to supplement the number of after-school sports programs and to use during inclement weather.

To increase the diversity within the building, there should also be areas dedicated to socializing without physical activity. These areas can be multi-purpose spaces, retail establishments, and cafés.

2. Design Problems and Issues

The boundaries of the site are clearly defined on two sides by major roads and the rear of the site is defined by an electric right-of-way. The presence of this utility should be studied to determine an appropriate response.



Figure 12. While the stream can be an amenity to the site, the power poles are more of a visual challenge. It may be possible to relocate the right-of-way. The owner of the utility is interested in relocating the wires underground, along Bus. Route 5.

Meandering through the site is a small stream that is six feet at its widest and only a few feet deep. As minor as this stream appears to be, it is a part of the non-tidal wetlands of Charles County, and has a 25-foot clear right of way to each side.¹¹ However, it is possible to bridge over the stream for pedestrian and vehicular traffic.¹²

While my thesis is to create a “walkable” suburban community, the automobile will remain an inseparable aspect of the residents’ lives. Thus, parking will be a major issue. Most of the commercial activity in the area uses surface lots and the residential parking varies upon building type. Single family homes use driveways and some street parking, while row houses rely on surface lots, allowing for parking immediately in front of each house.



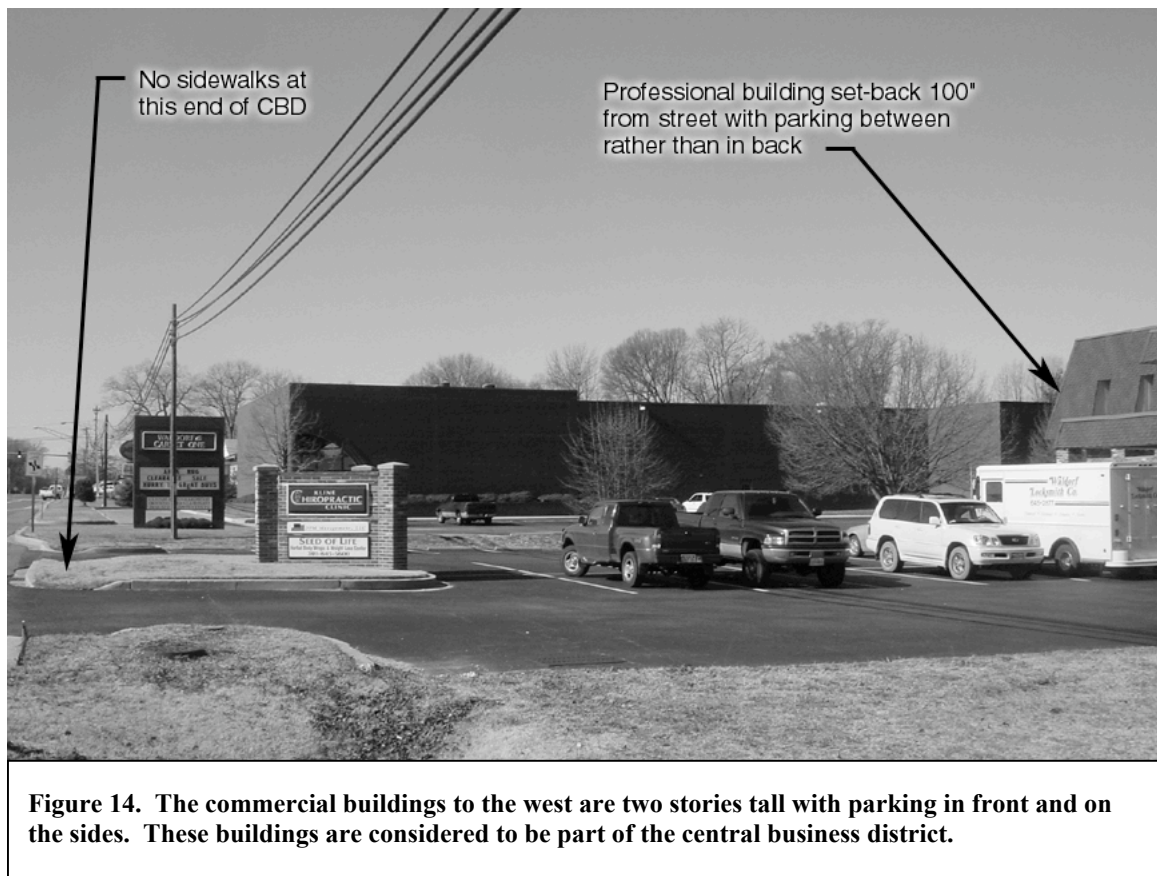
Figure 13. The higher density housing beside the high school offers very little architecture and landscaping to enrich the area. This community, misleadingly called "Village Green" was created for low-income residents, however, there is not a green or other significant public space shared by the apartment buildings.

¹¹ Charles County Code, 297-322

¹² Steve Macesic, Interview.

A related issue is the auto traffic and how the transportation system can best serve the community. Currently Bus. Route 5 is classified as an intermediate artery for Charles County, carrying traffic at 45 miles per hour. However the master plan for the area is calls for the road to be slowed down to 35 miles per hour and downgrade a major collector.¹³ My thesis includes a proposal for the redesign of the streets in the vicinity of the center to help connect the residential areas with the CBD and schools.

To relate to the existing fabric of Waldorf, the building should be limited in height. Very few buildings exceed four stories. Immediately around the site, no building is currently higher than two stories. However, several interior spaces of the program call for a 40-foot clear height.



¹³ Waldorf Sub-Area Plan, p.3.

3. Facility Usage

Intended as a community-wellness facility, the center must respond to the needs of the area residents, schools, and businesses. It will see different crowds throughout the day on weekdays and a general crowd on weekends. The program is derived from those of other recreation and wellness centers around the country, and is designed to complement the existing activity centers in the region.

Weekday mornings attract working individuals who want their general fitness needs met, whether it is a workout, an aerobics class, or swimming laps in the pool. Often, these people will shower, change into their clothes for work, and continue straight to their employer. The afternoons will see groups of office workers participating in low impact team-building activities such as a Ropes course. Sharing the facility, will be a class of school children taking advantage of the large variety of activities not available at their school. In the evening and on weekends, the facility sees the largest audience: people looking for general fitness, some for team competition, and others for entertainment. Entertainment can be achieved through physical activity, watching peers participate in events, or simply socializing with others.

To facilitate efficient and comfortable usage, certain programmatic relationships and divisions are necessary. Following the Program Tabulations chart, the Program Description and Relationships section covers these issues.

4. Table 2. Program Tabulations

Outdoor Spaces	Pref. Orient.	Dimensions	Qty	Total SF
Rugby	NW-SE	236x522	1	123200
Softball, Little League Baseball	ENE	200'R	1	31415
Minor/Major League Baseball	ENE	400'R	1	126000
Soccer, Lacrosse	NW-SE	195x330	2	128700
Multi-Use Athletic Field		280x400	9	1,008,000
Volleyball		30x60	2	3600
Basketball		70x104	2	14560
Climbing Wall (2000 sf surface)		55' h	1	3000
Ropes Course		60' h	1	4000
"Extreme Park" (skateboards, in-line skates, bikes)			1	20000
Total		33.5 acres		1,462,475 sf
Indoor Spaces				
Arena Football, Soccer, Ice Hockey <stands>		85x200x40	2	46000
50m Competition Pool with Diving <stands>		60x165	1	22250
Leisure Pool with slides and wave machine			1	10000
Therapy Pool (accessible)				1500
Basketball		70x104x25	2	18000
Volleyball (shared with basketball)		30x60x25		incl
Resistance Training			1	5500
Table Tennis		13x23x12		incl
Climbing Wall (2200 sf surface)			1	2200
Multi-Purpose Room		50x70	2	7000
Juice Bar				300
Laundry			1	750
Administration Offices				3500
Wellness Center				
Spa (sauna, massage, hair salon, tanning)			1	9400
Consultation Offices			3	330
Administration Offices				230
Subtotal				147872 sf
Equipment Rental and Storage		2.5% gsf		3700
Locker Rooms, Toilets, & Showers		3.5% gsf		5200
Storage		5.2% gsf		7500
Mechanical, Electrical, Communications		10.3% gsf		15200
Circulation		19.9% gsf		29400
Total				208872 sf
Outdoor and Indoor Total		38.3 acres		1,667,347 sf

5. Program Description and Relationships

OUTDOOR SPACES:

The fields, courts, and areas have unique requirements for each sport; however, they share a few basic requirements for pleasurable and comfortable use. Viewing stands with a public announcement system can accompany each to encourage competition play. Shaded areas offer relief for athletes and spectators. A small concession building will provide refreshments, but is not necessary as portable concession stands can be used. Further study will determine the need and appeal for each. Team scoring can be displayed by a scoreboard whether it is electrical, mechanical, or manual at each area. Lighting fixtures allow evening and nighttime use of the outdoor areas. Close proximity to locker rooms is desired, but not required for these areas.

The sports fields (**Rugby, Softball, Baseball, Soccer, & Lacrosse**) are all grass or artificial turf fields that can be used for other outdoor uses (Frisbee, concert, etc.), but will be designed for the intended use. Each has a preferred cardinal orientation to reduce solar glare. The equipment for field maintenance will require covered, securable space nearby.

Rugby uprights are permanent fixtures in the ground similar to football uprights, with slightly different dimensions. Catch nets behind the goals are required if an adjacent field, structure, or people could be affected by a ball falling into that area.

Softball and **Little League Baseball** utilize identically shaped and sized fields. They both require safety fences behind home plate. Additionally, a wall or fence can be used to limit the size of the outfield and help prevent balls from traveling into adjacent

areas. Dugouts are considered a luxury item, but offer shade and seating. Minimally, benches behind home plate will be provided.

Minor League and **Major League Baseball** have identical requirements as softball and little league baseball; however a larger field is used.

Volleyball can be played on sand, earth, or hard surface. Other than a volley net, there are no required fixtures. If additional courts are nearby, dividing nets/fences will prevent stray balls from entering a court. Additionally, a judge's stand near the volley net offers a professional appeal to the court. Volleyball courts are often shared with basketball courts, using removable net poles. However, outdoor courts typically are not shared due to the extensive use of both during warm months of the year.

Basketball is played on a hard surface with permanent goals, and requires no additional fixtures.

Climbing Walls offer a grand structure in the landscape when freestanding, or can cover an otherwise bland wall of an existing structure. They require vertical space and a fixture several feet from the wall for a person to belay a climber. Without modifying the climbing structure, walls are frequently "rerouted" to offer new challenges to climbers of all skill levels. Equipment storage can be incorporated into a freestanding wall, exist as an outbuilding, or kept in the main building, if it is nearby.

A **Ropes Course** is a network of ropes in lattices and tension strings. Participants must create ways to move through the course, strung high above the ground, while completing tasks assigned by an administrator. Often, companies contract their use for team building and motivational exercises to challenge and inspire the mind.

The “**Extreme Park**” features a skating area with challenging obstacles, a fast-skating area, and ramps for skateboarders, in-line skaters and BMX riders of various abilities.

INDOOR ACTIVITY SPACES

Similar to the outdoor spaces, these areas require spectator stands with nearby concessions. Each sport/activity has different requirements for scoring and delivering necessary information, and is discussed with each individual activity below.

Arena Football, Soccer, and Ice Hockey can use the same play area, enclosed by a perimeter wall. The efficiency of shared arenas allows for tournament play (three ice hockey rinks at any given time) and varied use during unscheduled times. The soccer and football “fields” are played on an artificial turf “rug”. For ice hockey, the “rug” is removed and ice is created on the floor of the arena. Each sport can use the same scoreboard and P.A. system. Ice hockey is the most demanding of the 3 sports, requiring ice-creating and maintenance equipment, plumbing, and humidity control. Proximity to locker rooms is important.¹⁴

Indoor **Basketball** and **Volleyball** courts have the same requirements as outdoor courts. Typically, an indoor court will have a rubber floor. It is possible to set up 3 volleyball courts on 2 basketball courts, while keeping a third basketball court open for play. Typically, a netted divider is used to prevent stray balls from entering an area.

The swimming pools (**25m** and **50m Competition Pools**) are the most demanding elements of the facility. Strict building and life safety codes direct climate control, material selection, locker room design, ceiling heights, lighting levels, and chemical usage. For accessibility, a ramp must be incorporated into at least one of the pools. A

¹⁴ Ice Rink Information Guide, p.2.

large variety of activities will occur here: team sports, like water polo and races, diving, fitness classes, lessons, physical therapy, and individual lap swimming.¹⁵

Resistance Training is a “broad term that refers to use of weights, machines, rubber strands, or use of other devices that resist the movement of the exerciser.”¹⁶

Weight training and strength training are both considered part of this category. This part of the facility will be filled with machines and free weights. Physical therapy and training are offered as part of the wellness center.

Table Tennis is a low-impact activity that improves hand-eye coordination. Tables are joined at the middle or two separate pieces, regardless, they are wheeled for easy moving and storage. The space dedicated to table tennis can be used for other events. Likewise, table can easily be set up in other areas, if necessary. Equipment rental should be nearby.

The **Climbing Wall** inside the facility is very similar to the outdoor climbing wall. However, there exists the opportunity for better climbing equipment and different opportunities, such as automatic belaying devices and bouldering caves.

NON-RECREATION INDOOR SPACES

Support spaces are required for the various activities within the facility. Many of these areas are listed below, but are not limited to this list.

Multi-Purpose Rooms provide flexible use space. With a moveable partition, a room can be divided to accommodate smaller events and privacy. The rooms can be used as classrooms or as a sporting space such as karate or table tennis.

¹⁵ Considerations for Indoor Pool Construction, <http://www.dri-pac.com/pool>.

¹⁶ The Weightlifters Encyclopedia, <http://www.wlinfo.com>, June 15, 2003.

The **Equipment Rental** area allows individuals to try a greater variety of activities by loaning out equipment that is not otherwise owned by the general public. Most rental equipment is available for hourly or day-use, but hiking, camping, and other equipment can be available for overnight and extended use.

Locker Rooms must be available in the facility, and can be divided up and spread throughout. The swimming pools and team sports areas could have separate locker rooms and showers to offer better comfort to other users of the facility. Adjacent to a pool, they smell like chlorine, and can be an unwelcome odor to individuals not using the pool. Sports teams will flood a locker room all at one time and can be intimidating to others. A third set of locker rooms should be available for personal storage and changing areas. It is also possible to include personal storage in other parts of the facility such as corridors, outside of activities areas. For efficiency, locker rooms are typically semi-private. Individual changing rooms are rare, and showers are often in large rooms without partitions or privacy curtains. A few private stalls can be created for those who desire such.

Storage is important for efficient use of the building. Housekeeping closets should be distributed throughout the building to provide convenient access to cleaning supplies in the event of spills or other mishaps. The sporting arenas also require equipment storage adjacent to their spaces.

Laundry facilities are necessary to handle in-house linens. Towels are provided to guests and are returned within the center. Only a few industrial-sized machines are required to handle the load. It is possible to out-source laundry.

A **Spa** provides a place to relax and unwind with a sauna, whirlpool, massage, hair salon, and tanning. As an all-in-one facility, it can be marketed as a day spa, where a person can spend an entire day being spoiled. Many users of these services will not utilize the fitness aspect of the facility, and will want quick access to the spa. Therefore it should not be imbedded in that part of the facility. However, many swimming pool users and individuals in physical therapy may want access to the sauna and whirlpool. Convenient access from the pool would be a convenience secondary to general public access. The spa should have a private changing room and shower facility that caters more to privacy than is required in the general locker rooms.

The **Health Clinic** serves both the healthy and sick. Well-patient care services, such as check-ups, nutritional programs, and fitness programs supplement the older notions of health clinics, like diagnostics and women's centers. Medical offices provide spaces for personal meetings with professionals.¹⁷ Additionally, classrooms for group activities and meetings allow for important interaction for discussion groups.

¹⁷ Celebration Health – Celebration, Florida, p.134.

6. Sustainability Issues

Site Specific Issues:

- southern exposure is street-side
- preserve wetland
- maintain existing trees
- large building envelope
- heating, cooling and lighting large volumes

General issues to address:

- running energy
- embodied energy
- lighting
- environmental quality
- rainwater
- potential reuse
- long and short term pollution
- toxicity of materials

7. Structural Issues

The ground beneath my site has a layer of gravel atop bedrock; an ideal situation for a poured foundation.

Recreation centers commonly enclose vast clear-span volumes to maintain safe areas of play. The largest room in the building is the archery range. While this space can have columns, the required ceiling height will demand tall, therefore thicker, columns. However, the soccer, ice hockey, and arena football fields require column-free playing areas. Each field will require a minimum 85-foot span. Spectator seating may increase the span in order to provide unobstructed views.

The region does not expect heavy snowfall that lingers throughout the season, therefore, the snow load on the roof can be managed with a flat roof, however, there are

opportunities to alleviate the load while breaking down the scale of the building using multiple and/or pitched roofs.

8. Mechanical System Issues

The center will receive year-round, day and night use.
15.5% gsf

Large volumes

Swimming pools – require an independent HVAC system that is designed for high humidity use.¹⁸

Humidity levels

Specialty lighting for sporting arenas, pools

Acoustics for large rooms (pool, archery range), riflery range, offices, housing

Computer controls for energy efficiency

9. Life Safety, ADA, and Other Code Requirements

The program and functionality of the recreation center requires that most spaces have numerous direct exits to the exterior to satisfy Life Safety Code.

The Americans with Disabilities Act Accessibility Guidelines requires all new public buildings to be 100% accessible. Multiple elevator banks may be necessary, as the building footprint will be very large.

¹⁸ Considerations for Indoor Pool Construction, <http://www.dri-pac.com/pool>

C. Precedent Analysis

1. Chelsea Piers - Program

Located on the Hudson River in New York, New York, Chelsea Piers offers a wide variety of sports and activities. Thus it serves as the primary programmatic precedent. Several differences to consider are that the Pier satisfies a larger population and supplements the city's existing entertainment opportunities, whereas my thesis proposes to become the activity center in a smaller town.

Just as many major buildings in Manhattan, the Pier incorporates public parking in its design. Avoiding a costly parking structure, parking is located out on the piers, but kept at street level. Propped above the parking are various venues for the piers.

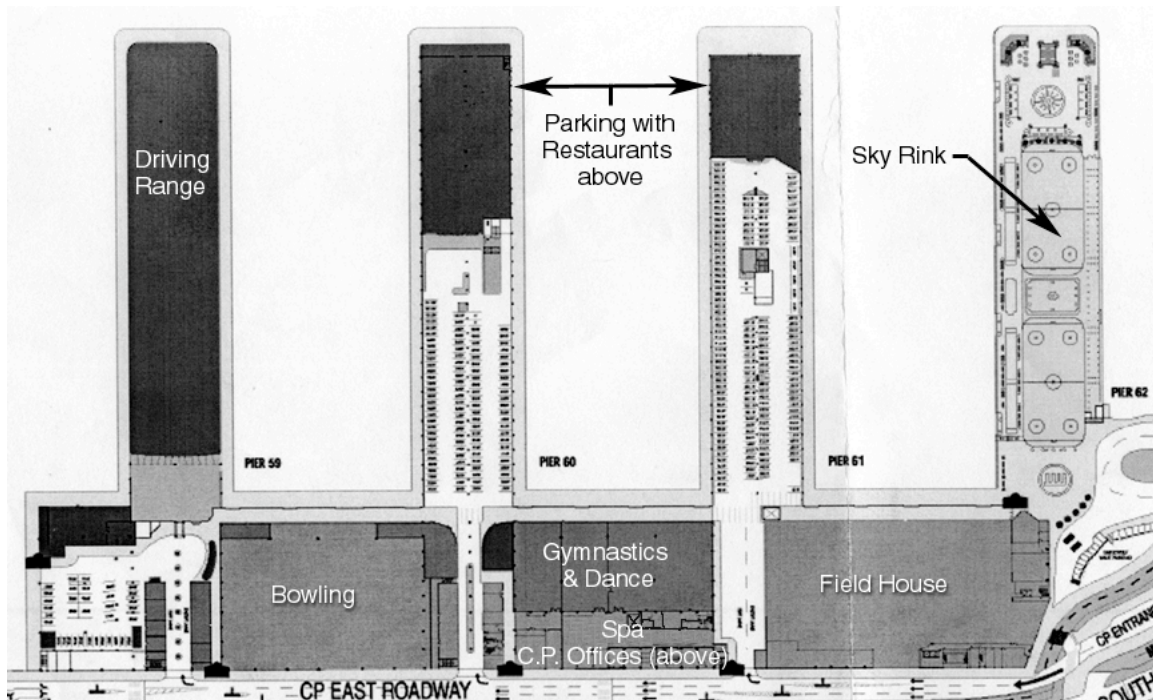


Figure 15. Although the piers remain open to the general public, activity participation is limited to paying guests.

Table 3. The program of venues and activities available at the Piers.

FIELD HOUSE

- Soccer & Lacrosse
 - Youth Soccer
 - Adult Soccer & Lacrosse
 - Field Rentals
- Basketball
 - Adult Basketball
 - Youth Basketball
 - Private Lessons & Classes
 - Court Rentals
- Gymnastics
 - Pre-School Gymnastics
 - Girls/Boys Gymnastics
 - Adult Class Schedule
 - Gymnastics Team
- Baseball
- Rock Climbing
 - Youth Rock Climbing
 - Open Gym/Climb Sessions
 - Adult Climb Sessions
- Camps
 - Weekend All-Star Sports Camp
 - Sports Madness Camp
 - Holiday Sports and Gymnastics Camp
- Dance Institute
 - Youth Dance Classes
 - Adult Dance
 - Dance Studio Rentals
- Groups
 - Team Building
 - Field Trips
- Parties
- Preschool Programs

SKY RINK

- General Skating
 - East Rink
 - West Rink
- Adult Hockey
- Youth Hockey
- Skating School
- Figure Skating
- Camps
- Sky Rink Faces

ROLLER RINKS

- Extreme Park
- Adult Roller Hockey
- Youth Roller Hockey

- Skating School
- General Skate
- Roller Rinks Parties

SPORTS CENTER

- Membership Information
 - Corporate Membership
 - Senior Membership
- Sport & Fitness Programs
 - Personal Training
 - Pilates
 - Physiology
 - Nutrition
 - Swimming
 - Rock Climbing
 - Boxing
 - Basketball
 - Volleyball
 - Kayaking
 - Scuba Diving
 - Triathlon
- The Spa at Chelsea Piers
- Corporate Outings
 - Team Building/Mini Olympics
 - Rock Climbing
 - Facility Rentals

GOLF CLUB

- Golf Academy
- Golf League
- Membership
- Golf Getaways
- Junior Golf

<http://www.chelseapiers.com>

2. Ecological School – Architecture and Sustainability

To handle the issues of sustainability for a potentially large building, the Ecological School in Caudry, France offers the most rigorous programs to ensure that this school is environmentally appropriate in many ways. Designed by Lucien Kroll as part of a sustainability competition, the school addresses the concerns of running energy, embodied energy, lighting, environmental quality, rainwater, sustainability, toxicity of materials, long and short term pollution, potential reuse and recycling, even waste management on the building site.²¹

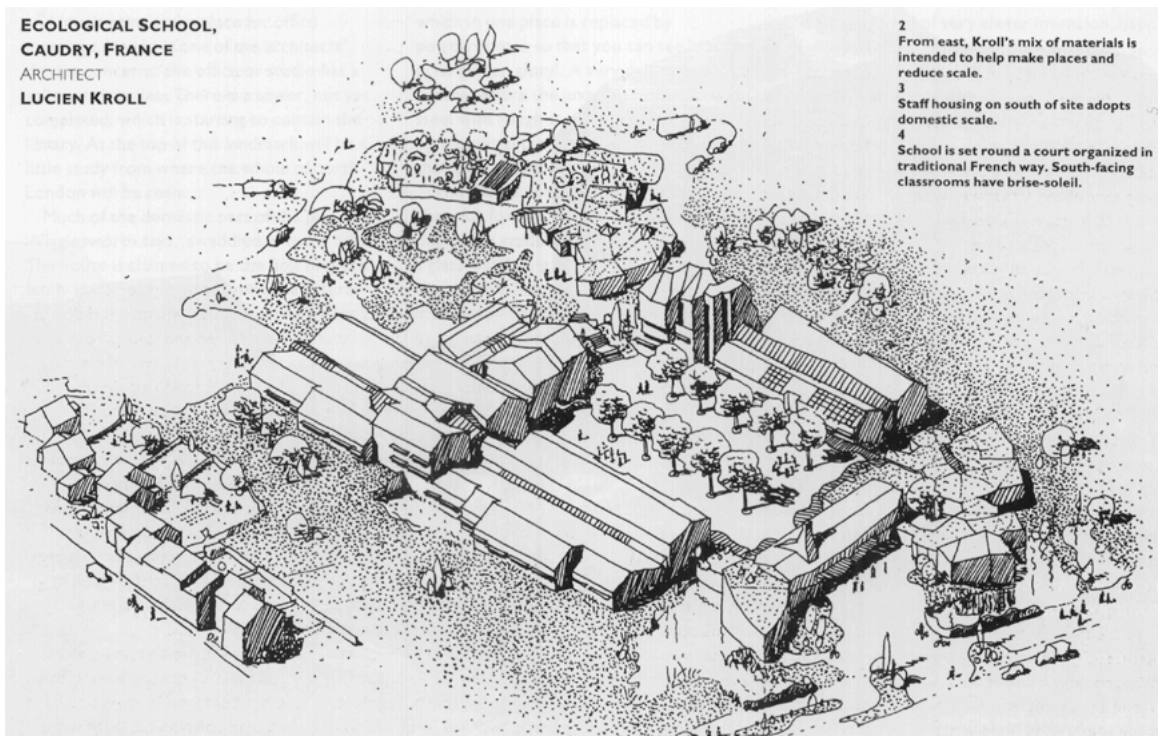


Figure 16. Lucien Kroll's Ecological School is accessed through a "gateway building" that is denoted by its tower, a solar chimney.

Kroll gives East-West alignment to the main teaching blocks, to give them north and south faces for maximum solar gain, using shading devices and reflectors to manage

²¹ *Sustainable School*, p.69.

the summer sun. It is important, too, for the linear buildings to have shallow plan depth for daylighting. However, even with an entirely glazed wall, it is difficult to completely



Figure 17. Psychologically, the corridors serve as places to socialize for students and faculty. Technically, they supplement that amount of natural light in the adjacent classrooms, and serve as a solar collector for the building.

daylight a room. To obtain satisfactory light levels throughout, Kroll introduced light from the corridor side via clerestories. Electric lighting is computer controlled to assist when daylighting fails to provide sufficient light. To minimize long, winding corridors, he used a single courtyard scheme to organize the campus. The corridors are considered short-stay places and therefore are used as solar collectors and solar chimneys for the building. Other methods of air temperature control used include underground pipes, buried several yards to cool and heat rooms by a few degrees, convection venting in the summer, and fan-assisted venting the winter.

For the landscape, special attention was given to on-site water management. Living roofs were used on all of the low-pitched, non-paved roofs to avoid the need for surface treatment, increase insulation, reduce and delay run-off, and to increase the biomass of the site. Run-off is managed with several retention ponds, which also supply grey water for toilets and irrigation.

For building materials, Kroll avoided using plastics. However, it was inevitable that PVC was used in electric cables and some plumbing pipes. Several buildings are clad in brick, others with untreated Larch shingles, with a life of 30-50 years.

Structurally, timber was used as much as possible (laminated beams for large spans), but concrete was used when fireproofing was required and for ground-based parts.



Figure 18. The various types of cladding offers identity to the different parts of the school, while handling the various sustainability issues such as embodied energy and life span of materials.

3. Celebration, Florida – Master Plan



Figure 19. The Celebration, Florida master plan quickly appears as an Olmsteadian master plan adapted for the present time.

This planned community, built by the Walt Disney Company in 1994, utilizes and combines the front porch living of yesteryear with the need for privacy and automobiles today. Designed as a walkable community, housing surrounds schools, parks, a church, and the downtown district (which includes mixed use development). The main streets form an array from downtown, and wind back into the residential areas. Various lot types are spread around the community: Estate, Village, Cottage, Garden, Townhouse, and Apartment, and are differentiated by their size, sideyard, and set-back requirements. Recreation vehicles are not permitted to be kept on the street. All lots are accessed by service drives in the rear where garages and parking spaces are located. The main streets

are left open for social interaction and recreation. However, recreation is not limited to the streets. Parks are integrated in each micro-community. Other amenities include a natural and a man-made lake, a large stream bisecting the site, and a golf course, connecting the development to the lake. At the entry point to the community is “Celebration Health”, a wellness center that combines a hospital, medical offices, and a health club.²² The physical layout of the town offers many good lessons about mixed-use and mixed-income housing.

Incoming residents signed a promise “not to complain about the mosquitoes, because they are a fact of life, or harass the alligators.” They also agreed to “hang tasteful curtains or blinds that showed only white on the street.”²³ This type of regulation keeps Celebration looking like an ideal place to live according to the Disney Company.



Figure 20. This view of the town center shows the manmade lake and the twin towers of Cesar Pelli's Art Deco movie house on the far right.

²² *Celebration Health – Celebration, Florida*, p.137

²³ *Celebration, USA*, p.6.

4. Campus Recreation Center, University of Maryland, College Park - Program

Serving a community of over 36,000 people, the CRC at the University of Maryland, College Park was designed to be the imageable location for the Department of Campus Recreation Services. The facility supplements the existing campus recreation network of swimming pools, resistance training rooms, basketball courts, wellness programs, and outdoor sports fields.

Although the CRC is focused on indoor activities, it offers a diverse set of outdoors activities not duplicated on campus. The Outdoor Aquatic Center consists of lap, diving, and wade pools, beach volleyball, and a refreshment stand. The Outdoor Recreation Center offers a climbing wall, a Ropes course, and equipment rental for on- and off-campus excursions.

The following few images show the square footage comparisons for the toilet, locker, and shower rooms, as well as the mechanical rooms.

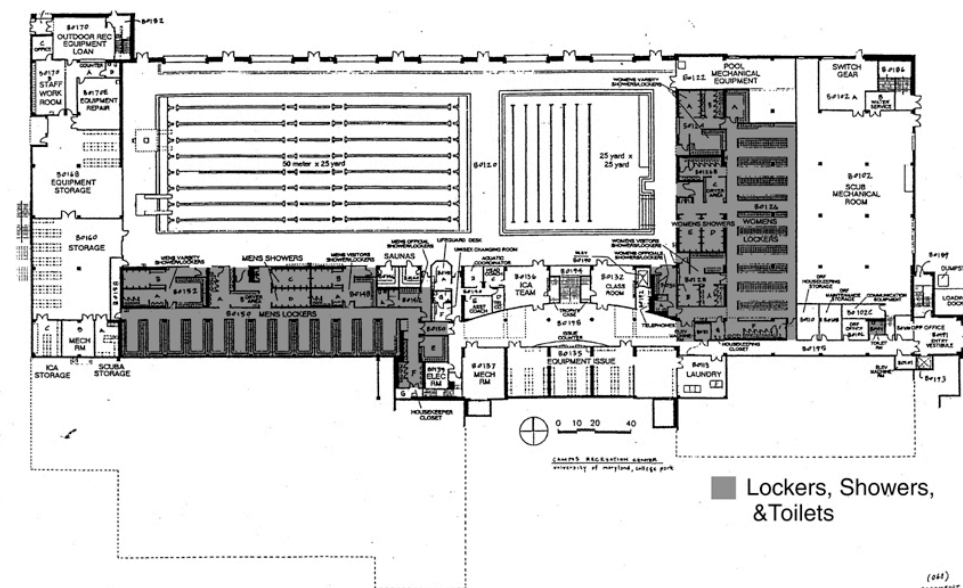


Figure 11. The basement level of the CRC contains the main locker rooms with the swimming pools. Also on this level are the equipment rental rooms for both indoor and outdoor recreation. The toilet rooms, showers, and locker rooms account for 15% of the space inside the CRC.

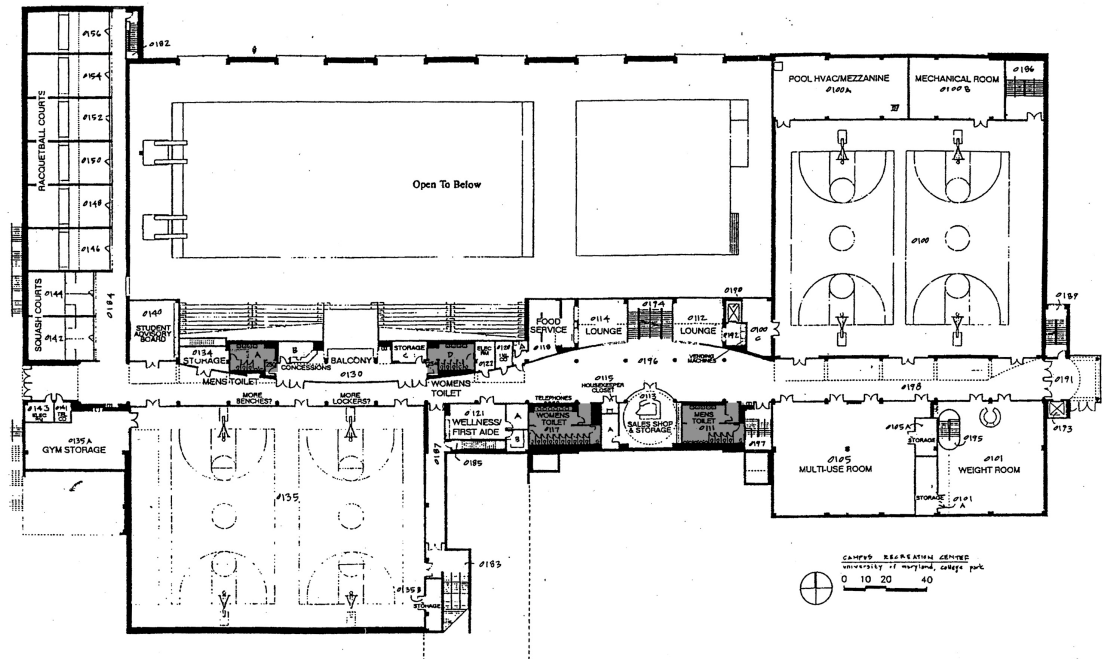


Figure 22. The ground floor holds most of the sporting spaces. This floor also has the highest percentage of space for corridors. Altogether, corridors make up 20% of the CRC. Shaded areas represent the lockers, showers, and toilets.

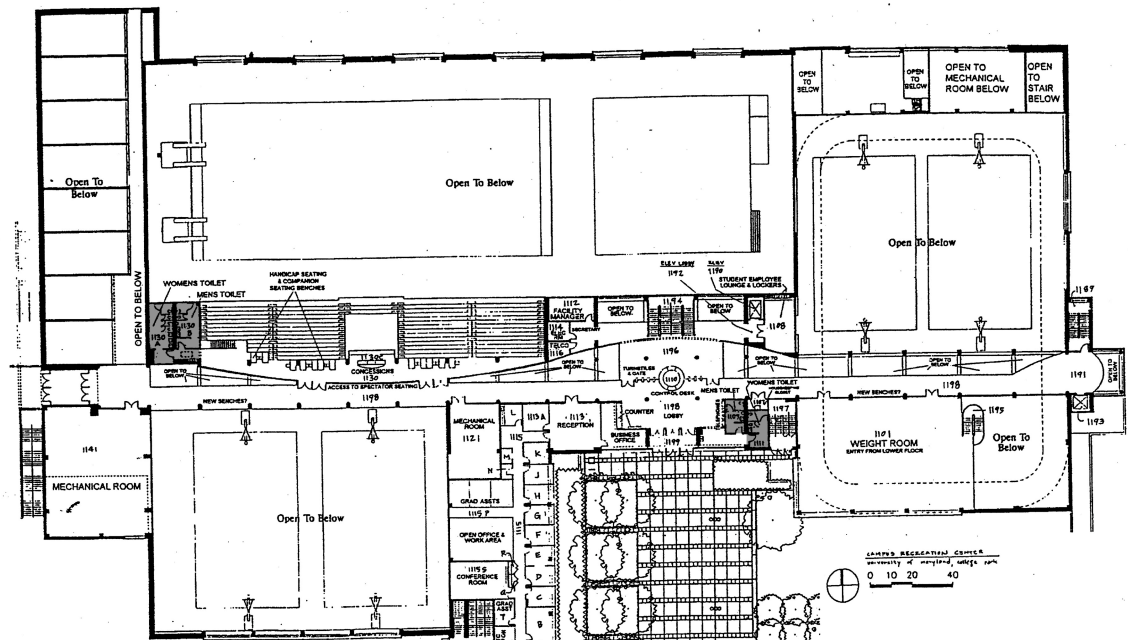


Figure 23. As the main entry level for the building, the first floor overlooks most of the sporting spaces below. Shaded areas represent the lockers, showers, and toilets.

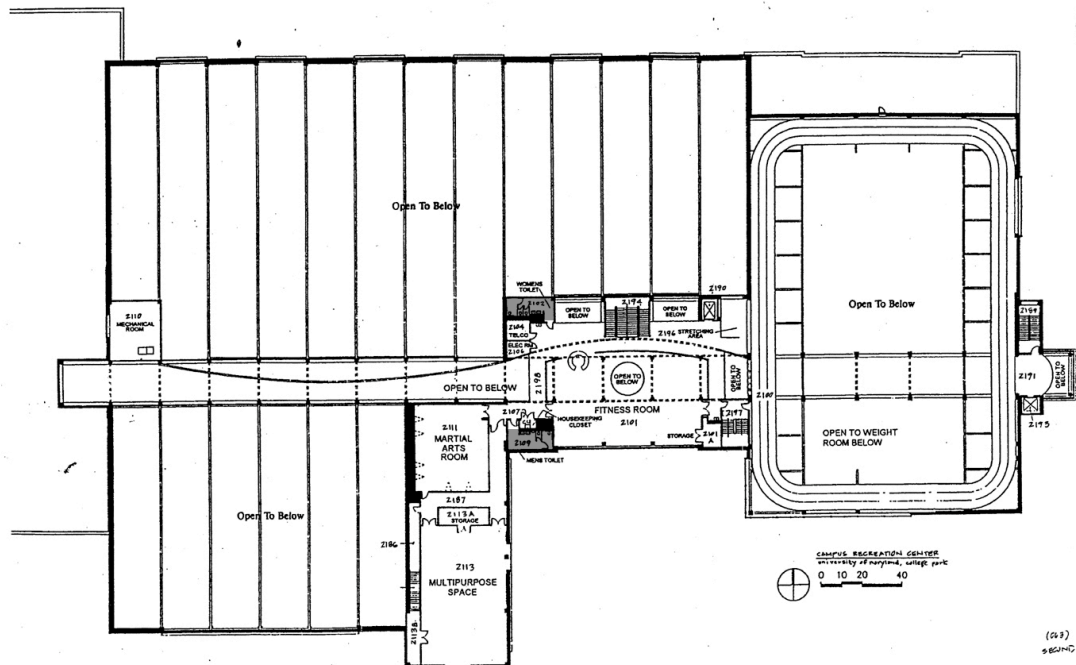


Figure 24. The second floor overlooks the entire facility, including a running track that is hung from the ceiling unifying several spaces. Shaded areas represent the lockers, showers, and toilets.

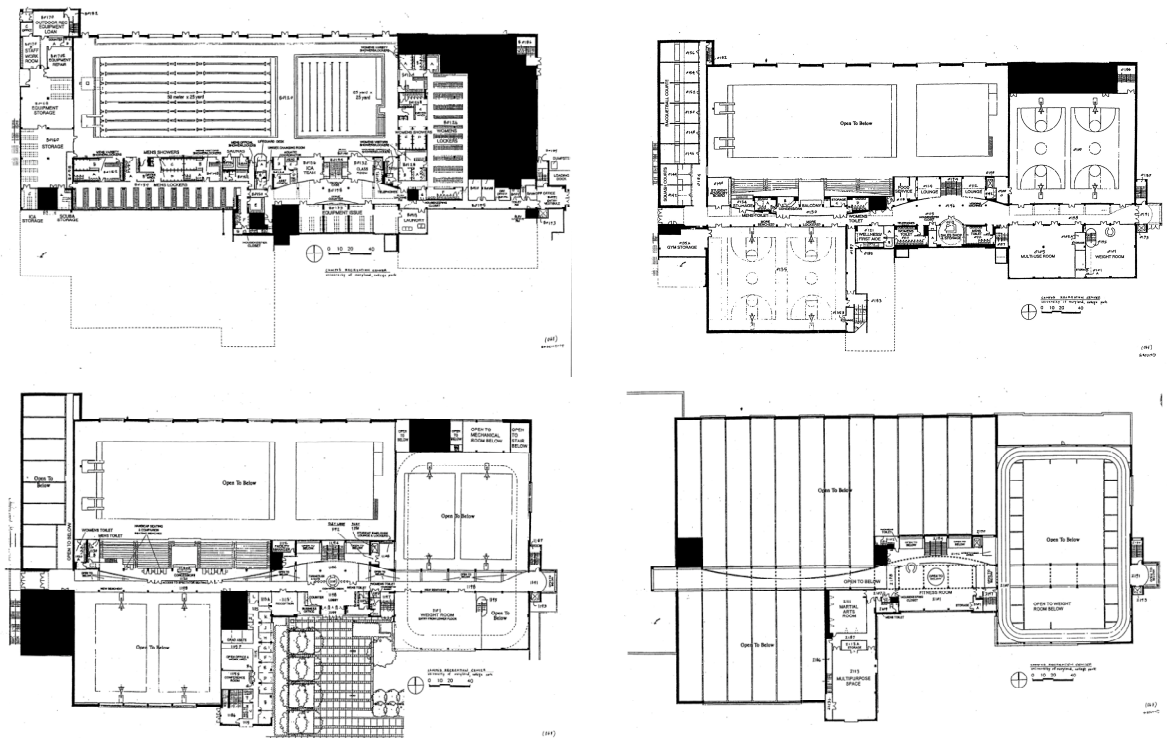


Figure 25. The mechanical rooms (shown as black solids), are distributed around the building and include a satellite centralized utilities building in the northeast corner. The mechanical rooms account for 15% of the space inside the CRC. Top left to bottom right: Basement Level, Ground Level, First Floor, and Second Floor.

The existing structures on the site are unusable for the program of the recreation and wellness center and will be relocated off-site or demolished, depending on their status with the County's Historic Preservation Society.

The center will be open to the general public; however, it should attract Waldorf residents as the primary consumers. Funded, in part, by the consumers as a pay-per-use or membership facility, the building must appeal to a wide variety of users at all skill levels. Professional venues and instruction provide the atmosphere and draw that is demanded by the consumers. Also funded by the county, the facility is used by local schools to supplement the types of activities available to the physical education program.

To incorporate the schools and engage the community, not only does the center need to respond to the health and entertainment needs of the consumers, it should respond architecturally on the site. Access to the site and location of the center relative to the schools, housing, and CBD each play important roles in the overall perception of how well the facility ties the existing suburban area together to create a community.

A. Conceptual Design Strategies

The following three schemes propose various ways to reorganize the end of the CBD in Waldorf while creating the necessary links to create a community. Included in each strategy is the recreation and wellness center and a housing component.

1. Scheme 1

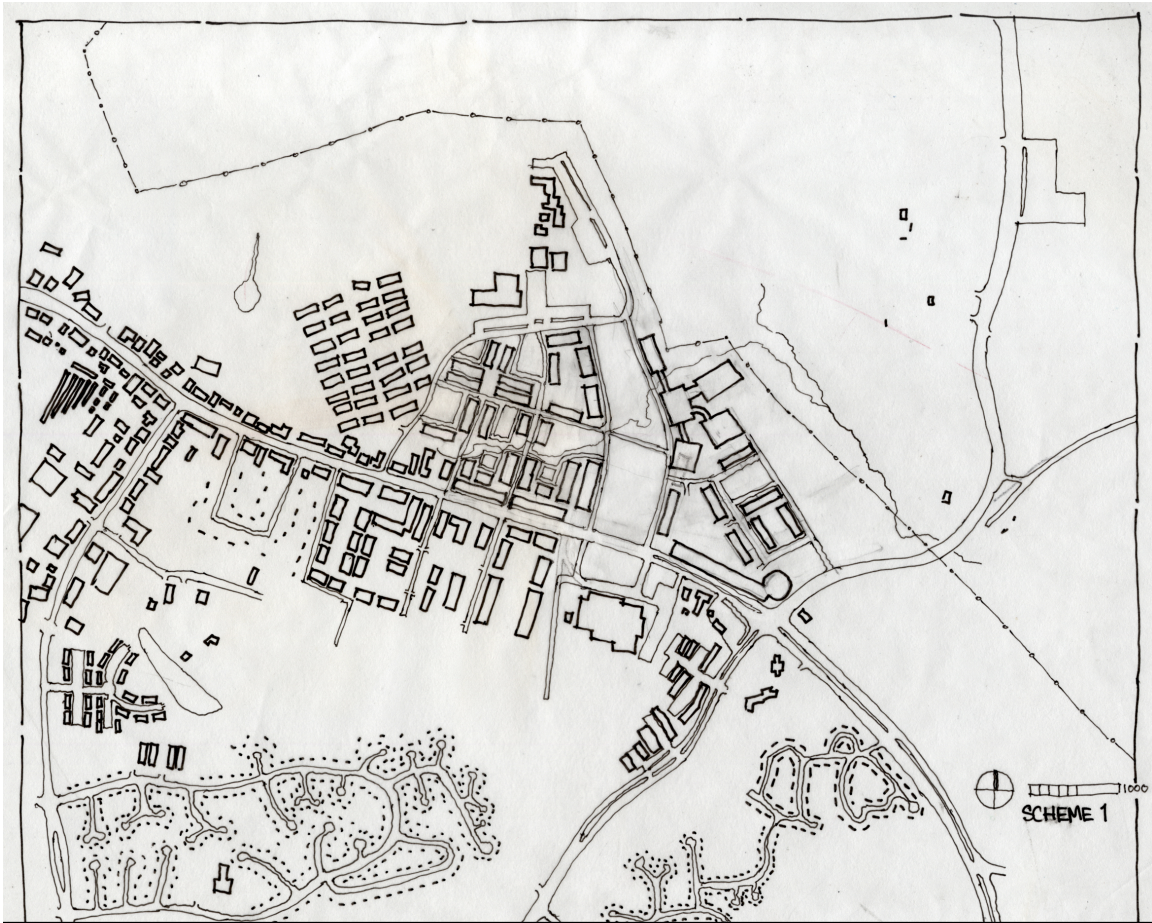


Figure 26. This scheme uses the existing infrastructure and simply increases density along the commercial street (Leonardtown Road) by inserting buildings while allowing room for access drives to rear parking.

New rowhouses are organized by shared green spaces, offering a sense of land ownership in a dense housing situation. At a larger scale, the major public buildings are unified by a great green. The center is imbedded in the new community and placed on the green to maximize its presence from Leonardtown Road.

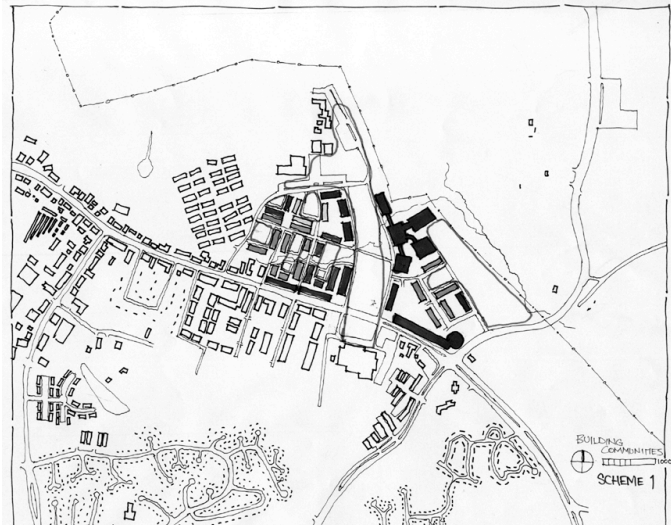


Figure 27. Different residential micro communities in the new development are shown by color groupings.

This scheme only represents one type of housing, however it can be modified to offer other types, such as garden apartments, cluster housing, and estate lots. Another short coming may be the distance between the main roadway and the center. On a street where all of the public buildings have a small set-back, a building that has been pulled away may not receive any “window shopping” foot traffic.

While this scheme makes a strong connection between the schools and housing, it may not satisfy my intention to create a walkable community.

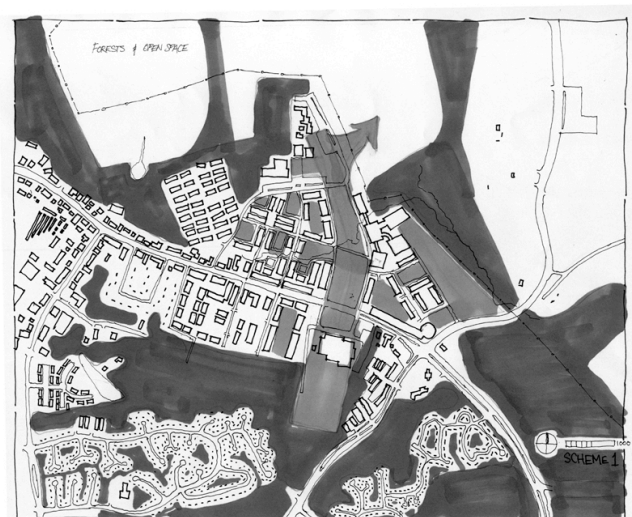


Figure 28. Open green spaces (light tone) are captured by buildings and forest (dark tones).

2. Scheme 2

This scheme takes a radical approach to small town planning by applying a city street grid to the site and removing all of the small buildings of the CBD that are set-back from the road. This plan allows for on-street parking and additional parking in the rear of the buildings. Lining the new residential streets with row houses creates micro communities, where residents can socialize with neighbors. Additionally to help knit the new community together, the houses do not back the street or the center. Each new residential street is terminated by the creek, offering democratic access to the amenity.

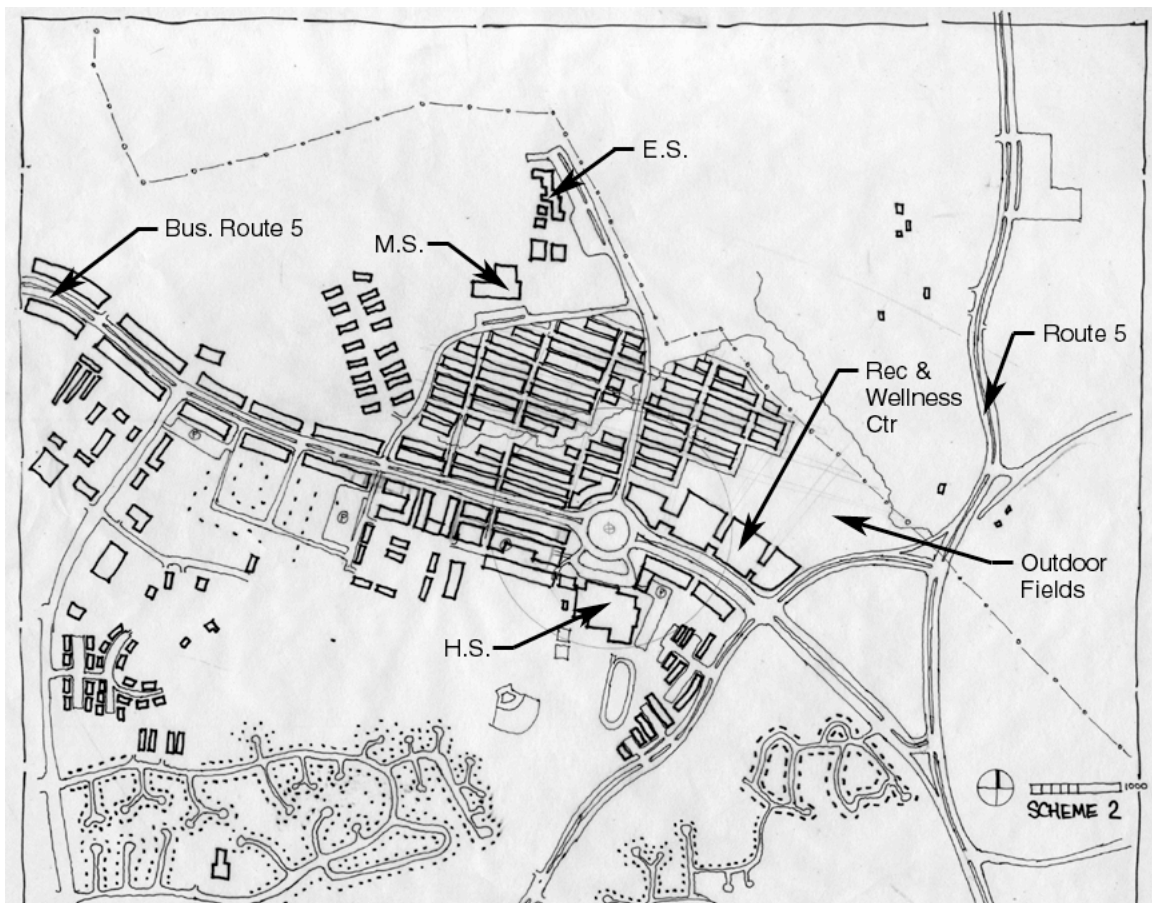


Figure 29. The high school starts an axis that is narrowed to the width of the street section and winds around to the elementary and middle schools.

This scheme promotes a walking environment by carrying the same tight street section that exists in the heart of the CBD down to its end at Mattawoman-Beantown Road. The recreation and wellness center is located on Leonardtown Road for maximum community presence.

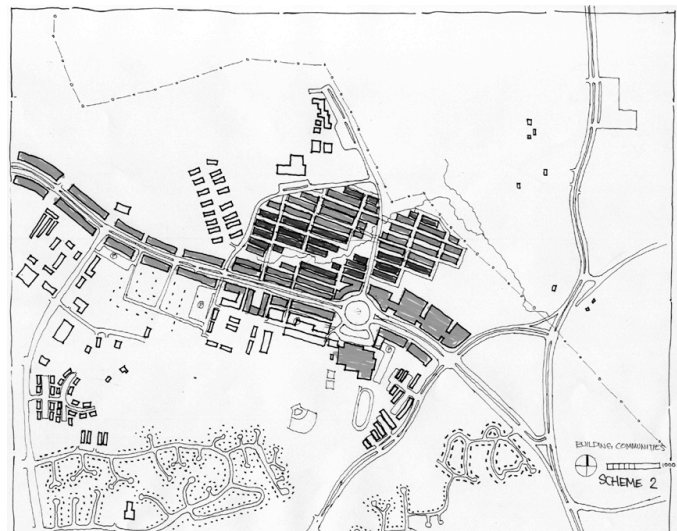


Figure 30. The recreation and wellness center is integrated with the CBD and acts as a terminus.

Currently, Route 5 traffic must turn left from Mattawoman-Beantown Road onto Leonardtown Road to continue South. To remove some of the traffic passing through the area, Mattawoman-Beantown Road is shifted, creating a continuous Route 5 traffic flow.

A problem with this plan is the weak visual connection between the schools, and no relationship between the elementary and middle schools to the community. Additional green space on the north end of the new housing could better link the community together. At the south-east end of the site, the noise and lighting for the outdoor fields could be a disturbance to the residents who front the fields. This could limit the use of the fields to day and evening play.

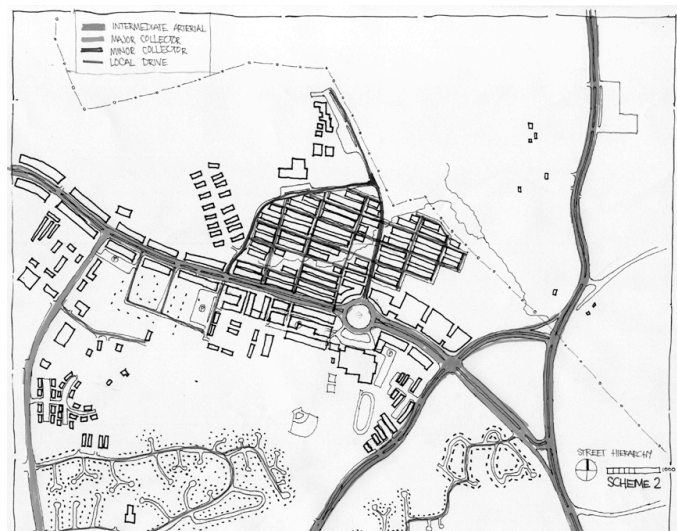


Figure 31. The new street grid is simple and tight, creating obvious links within the community.

3. Scheme 3

The third scheme applies a rigid street grid to the area and utilizes the sports fields as the major green spaces connecting the center, schools, and housing. Leonardtown and Mattawoman-Beantown Roads are also realigned to support and direct the grid. This grid is easily expandable as necessary. Both commercial and residential development along Leonardtown Road creates a walkable mixed-use development.

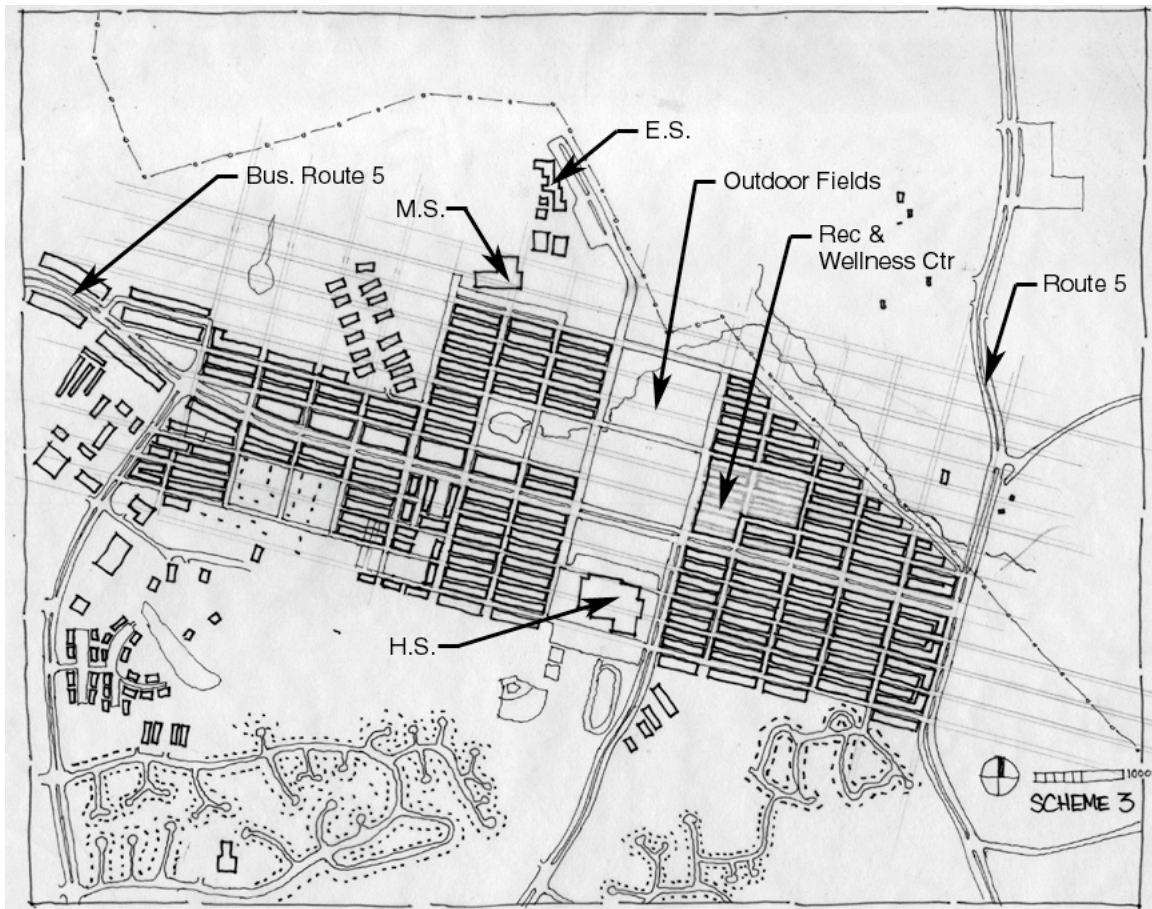


Figure 32. The high school is situated in the middle of a great green with new sports fields to the north and the existing fields to the south, linking the existing residential developments to the schools and to the center.

The new residential micro communities have visual access to the big green. Local residents utilizing the green can easily locate their street by never losing visually connection. This sense of always being at home can tie a community closely together. While this scheme attempts to connect the two schools to the north with the community, the



Figure 33. The green connects the dense development to the existing agricultural land to the north, reminding the community about the agricultural history of the town.

link is still weaker than the first scheme, where the green bends to address the middle school directly. The location of the high school in the middle of the green, delivers a strong message about the importance of education. The high visibility of the outdoor sports fields conveys a similar message about the need for physical activity.

This scheme largely handles parking on the street. However, the center incorporates additional below-grade parking.

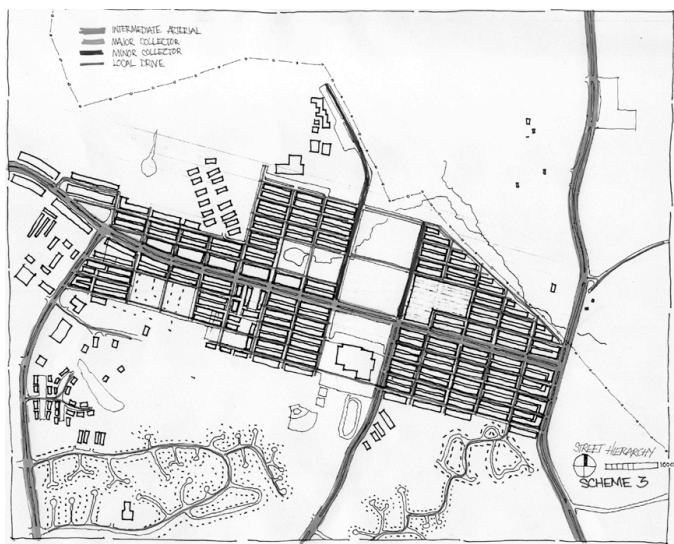


Figure 34. A short coming of the scheme is the roads surrounding the southeastern part of the new development. Surrounded by intermediate arterial roads, pedestrians are likely to feel trapped by the high amount of traffic.

4. Scheme 4

The final scheme draws from the garden city design, driven by the connections the center makes with the three schools. This scheme not only ties the elementary and middle school to the community, it brings them to the forefront. This scheme also shows mixed housing types in the community, putting the row houses on the great green spaces, leaving the single family and cluster homes with their yards and small parks.

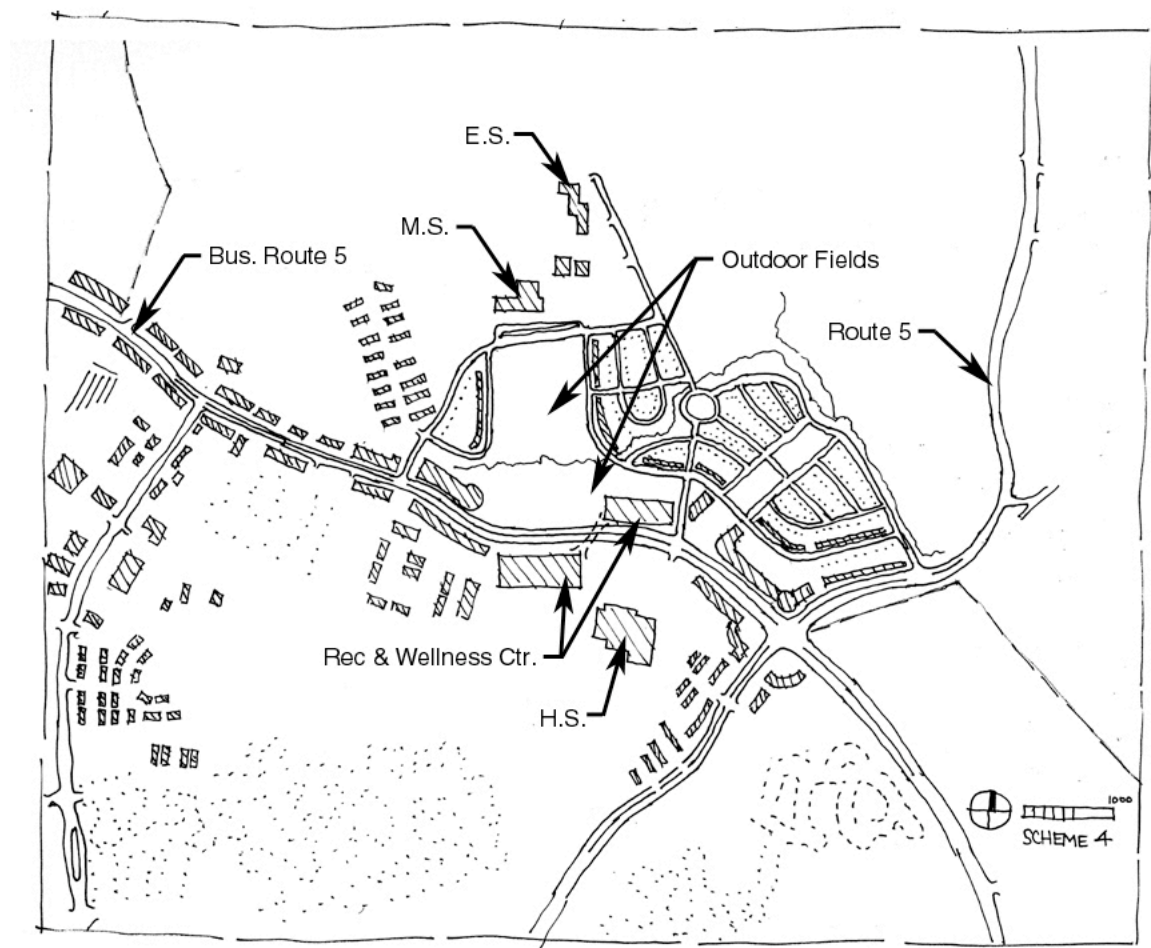


Figure 35. While putting emphasis on the schools, the rec and wellness center create a gateway into the CBD.

Many of the existing structures along Business Route 5 are removed, and new structures are built up to the street to create a pedestrian oriented commercial district. This scheme, as some of the others, uses service alleys behind the houses, removing many parked vehicles from the residential streets. Also, every residential building backs another, thus giving some privacy from exposing the rear of the building to the general public.

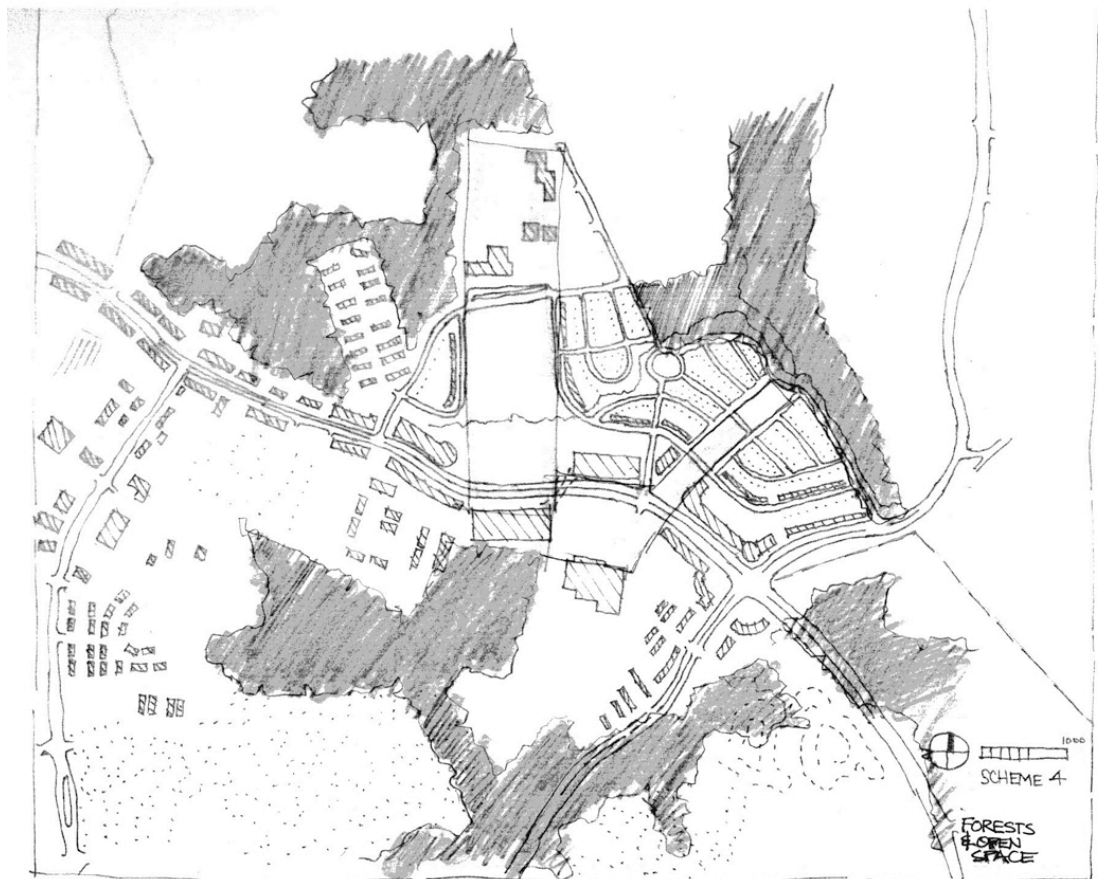


Figure 36. The green spaces are defined by the row houses and existing trees.

5. Scheme 5 – The Master Plan

From the previous scheme, it was deduced that creating a master plan for the entire area, and not just the immediate site, would generate a stronger context for the recreation and wellness

center, and the ideas of

creating connections

between communities

would be further

realized. Starting from

an aerial image of the

area, the opportunity for

an adaptive re-use of a

gravel pit presented

itself, and centerpiece

for the town of Waldorf

was generated as a large

man-made lake. As

part of a larger green

network extending to

the north and south, the

lake is the focal point of

activity for the town,

organizing several

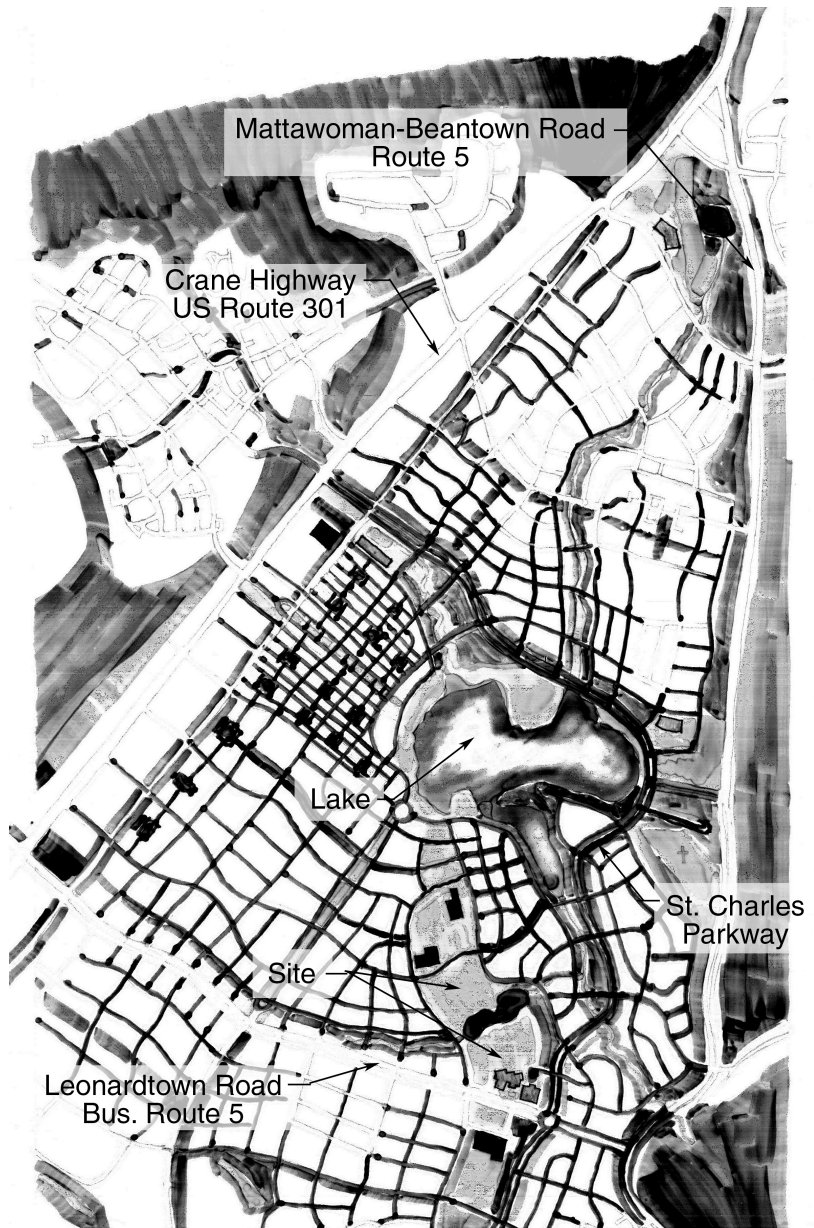


Figure 37. The master plan was influenced by The New Urbanism to create a set of communities surrounding a man-made lake. A new green network serves and helps organize the area. Houses along the “green band” face out, across the lawns to avoid the “back yard” effect and to form the side walls of the great exterior space.

different communities with varying housing types. The large “green band” that winds through the county is accompanied by the St. Charles Parkway, connecting Crane Highway and many communities to the White Plains Regional Park, four miles south. Forming fingers off of the “green band” are many smaller trails that wind through the residential and commercial areas, linking them to each other and the main north-south green connector. Along this main connector there exist several civic buildings: three neighborhood recreation centers, three schools, a county recycling center, and the regional park. It is because of the proximity of the three schools, that my site remained the same after completing the master plan.

The opportunity to create visual and physical connections between the three schools, the recreation and wellness center, and several neighboring communities is solved by siting the center atop a slight hill between the schools. It is only at this point that all three schools are visible simultaneously.

The unrelated orientation of the schools presented a difficult challenge to organize. Sharing street frontage with the high school, the recreation and wellness

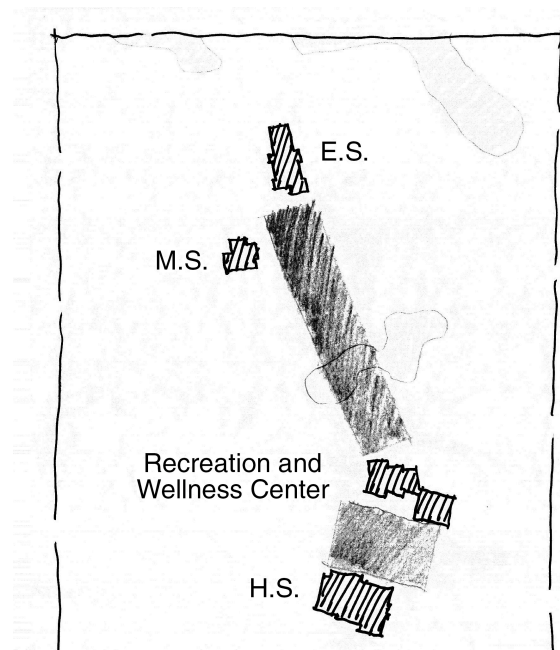


Figure 38. Informal manicured lawns open up the spaces between the schools and recreation center to form a visual connection between the schools, the center and the neighboring communities.

center was oriented to address the school along Leonardtown Road. On the north side, the building “twists” to address the elementary and middle schools. Filling the spaces between the schools and the recreation center is the exterior program for the center, thus the open playing fields create unrestricted views of the schools, and providing hierarchy to the buildings as they gently rise to form the edges of the exterior spaces with the surrounding houses.

Winding through the site, connecting the schools and the center is one of the main trails of the network. Originating from the trail along the parkway, south of the high school, this trail connects to the sports fields and parking lots of the school before heading to the recreation center. However, between the two buildings, Leonardtown

Road severs the otherwise simple pedestrian connection. To cross this minor arterial, the trail is lifted to form a new pedestrian bridge over Business Route 5 before landing at the entry level of the center.

Here, the trail interacts very closely with the building, first overlooking the arena playing field to one side, then bending to the north as it crosses the main axis and spine of the building, and finally overlooking the leisure pool to the other side before departing into the landscape. The trail remains completely exterior as it interacts with the building, however, parts of the roof extend over the trail to provide protection from rain and sun.

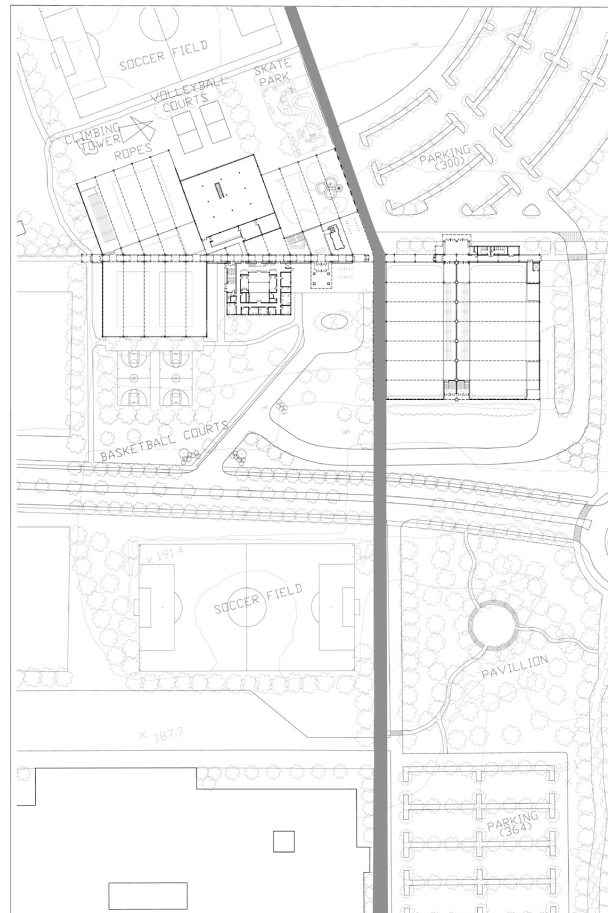


Figure 39. Noted by the thick gray line, the trail connects the high school to the recreation and wellness center via pedestrian bridge over Leonardtown Road.

The entry level, or upper level of the center is at grade on the Leonardtown Road elevation. The building appears as a group of buildings, connected by the spine, and broken by the trail. The lower level of the building is at grade to the north, and is continuous for the length of the building (passing under the trail, creating an unbroken enclosure to the arenas).

The upper level is the public area of the building, accessing the spectator galleries for all activity spaces and access to the Wellness Center. The control desk is central into the building, and is the point where members are granted access to the lower levels, where the activity spaces are located. By separating the public and member areas by floor, building security can be maintained while allowing entry to the building at several points along the upper level of the spine. Opening the spine to all of the activity spaces on both levels allows for visual and social interaction between the levels, and adds a dynamic between the floors, increasing social activity in the building.

It is along the spine, that the build “twists” to face north, thus creating three interior spaces. Each of the unique spaces contains a separate function for the building. The East Gallery holds the Member Desk, the interior Climbing Wall, and the main vertical circulation for the building. This wedge-shaped space joins the main entry and the Leisure Pool. The Center Gallery contains a concession stand, a juice bar with tables and seating, and entry to the locker rooms and the Wellness Center. The West Gallery is a multi-use space with a platform to serve as a stage. It overlooks the Athletic Pool and the Gymnasium.

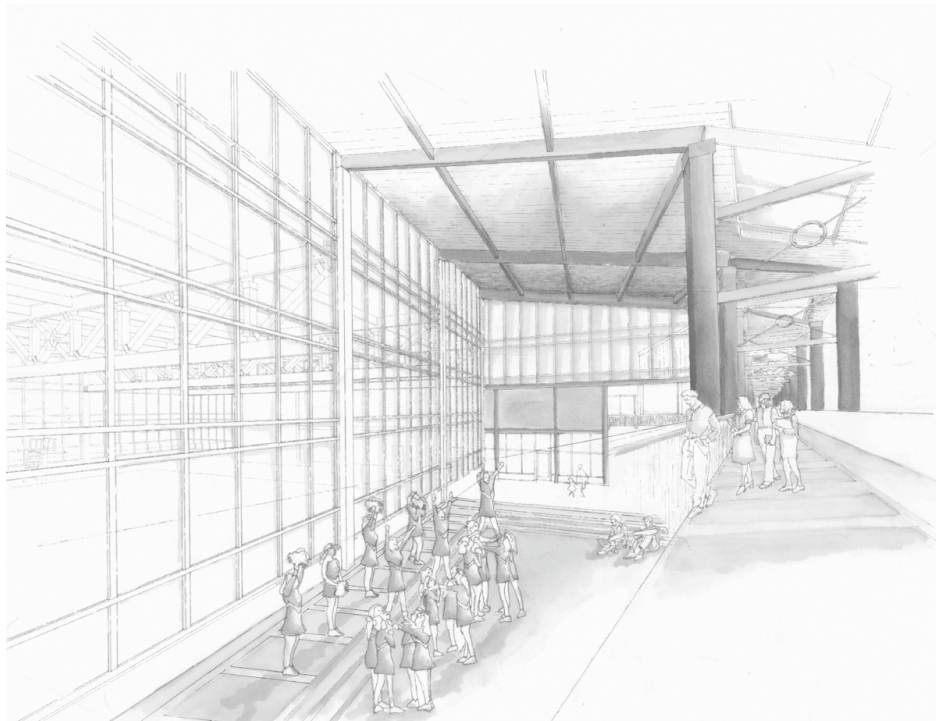


Figure 10. The most dynamic space in the recreation and wellness center, the West Gallery offers the greatest variety of functions and views. The spine overlooks the Gymnasium to the right, the Multi-Use Space below, and the Athletic Pool beyond the wall of glass to the left. Through the Gymnasium and the pool, there are views of the landscape through exterior walls of the glass.

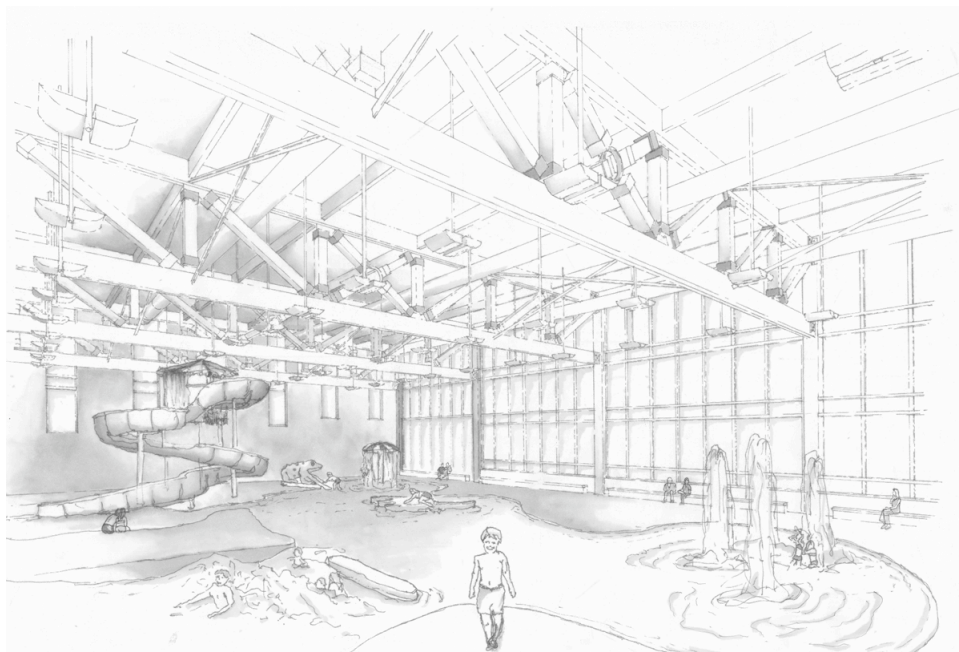


Figure 41. The Leisure Pool is an exciting place for children, filled with various aquatic elements for children of a wide age-range.

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